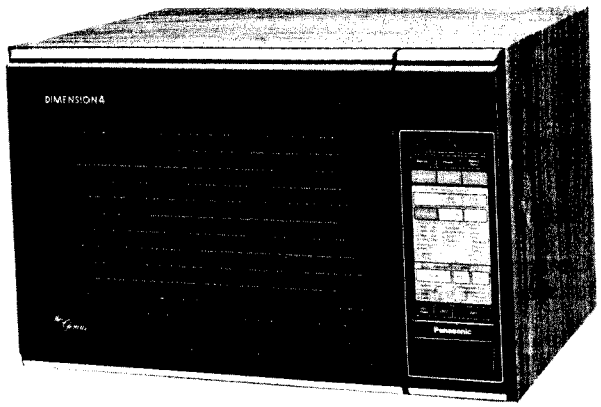
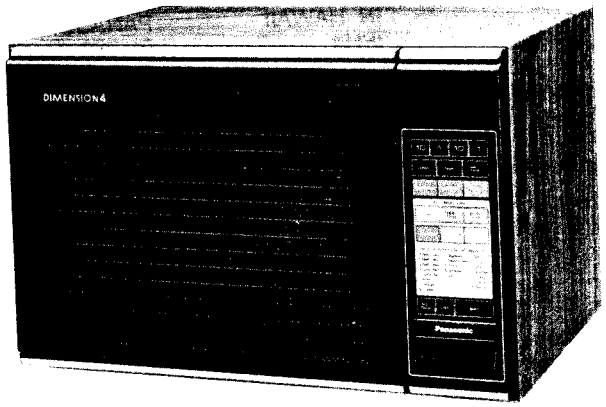
Service Manual

Microwave Oven

NE-9970, NE-9970C
NE-9870, NE-9870C



NE-9970, NE-9970C



NE-9870, NE-9870C

NE-9970, NE-9870 for U.S.A.
NE-9970C, NE-9870C for Canada

Specifications

Power Source :	120 V AC Single Phase 60 Hz
Power Requirement :	1,420 W (12.4 A)·····Microwave 1,560 W (13.0 A)·····Convection (NE-9970, NE-9870) 1,500 W (12.5 A)·····Convection (NE-9970C, NE-9870C)
Output :	700 W·····Full Microwave Power 1.5KW·····Convection (NE-9970, NE-9870) 1.4KW·····Convection (NE-9970C, NE-9870C)
Oscillation Frequency :	2,450 MHz
Timer :	99 Min. 99 Sec./9 Hr. 99 Min.
Outside Dimensions :	23-7/8" (W) × 17" (D) × 15-3/4" (H) 606 mm (W) × 432 mm (D) × 400 mm (H)
Oven Cavity Dimensions :	16" (W) × 15-1/2" (D) × 9-3/4" (H) 406 mm (W) × 395 mm (D) × 250 mm (H)
Weight :	73 lbs (33.3 kg)
Specifications subject to change without notice.	

Panasonic®

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Victoria Industrial Park
Carolina, Puerto Rico 00630

WARNING

1. This product should be serviced only by trained qualified personnel.
2. Though this product has been manufactured in compliance with :
   "Federal Performance Standard 21 CFR Subchapter J" (D.H.H.S.): NE-9970 and NE-9870 or "Radiation Emitting Devices Act" (NHW) : NE-9970C and NE-9870C.
   It is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage after every servicing according to the "Procedure for measuring radiation leakage"on page 30.
4. Any serviceman who learns of any accident pertaining to microwave radiation leakage should immediately notify the appropriate address listed below.

IN U.S.A. (MESCO)	Matsushita Engineering and Service Company 50 Meadowland Parkway, Secaucus, New Jersey 07094 Attention : Engineering Support Division. (201) 348-7000
IN HAWAII (PHI)	PANASONIC HAWAII, INC. 91-238 Kauhi St. Ewa Beach P.O. Box 774 Honolulu, Hawaii 96808-0774 (808) 682-2851
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IN CANADA (MELCA)	Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 (416) 624-5010

5. There are special components used in the microwave oven which are important for safety. These parts are shaded on the schematic diagram and marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.

(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches
   (5) Evidence of dropping or abuse

(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.

(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

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This service manual covers technical descriptions and parts list of models NE-9970, NE-9970C, NE-9870 and NE-9870C.
Please refer to parts list for the differences of applicable parts.
Models NE-9970/NE-9970C and NE-9870/NE-9870C are identical except NE-9970/NE-9970C have Auto Sensor Cooking Control feature while NE-9870/NE-9870C do not.
References to unique operating features of applicable model will be refered to in this service manual.

Location of nameplate

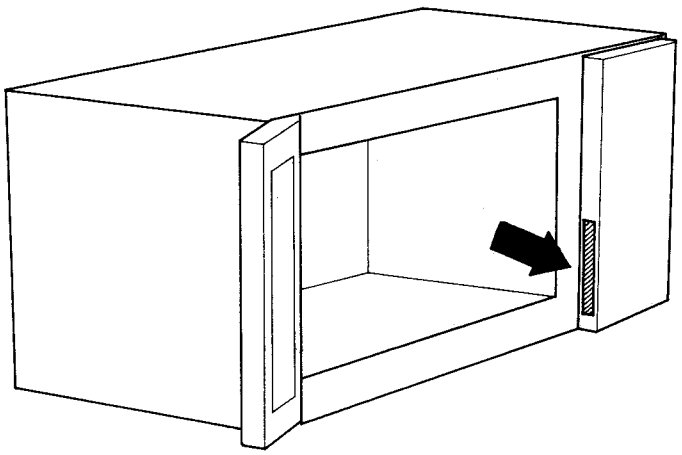
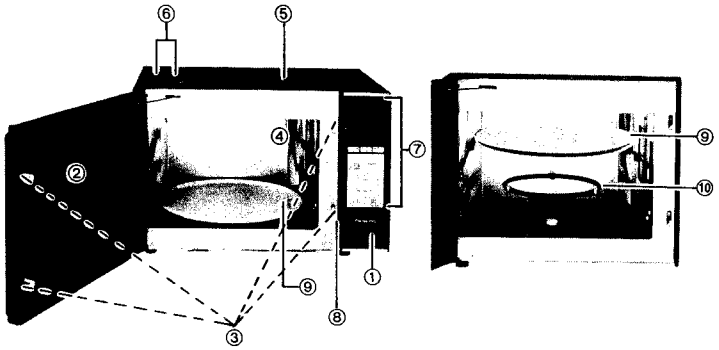


Fig. A

The nameplate is located at lower frame of the escutcheon base as illustrated in Fig. A.
The model and serial numbers will be found on this nameplate.

Feature Diagram



① **Door Release Button**
Push button to open door.

② **Oven Window**

③ **Door Safety Lock System**
Before any cooking function can begin, oven door must be securely shut.

④ **Oven Light**
Will turn on whenever the door is opened or during cooking.

⑤ **Oven Light Cover**
Allows easy access to replace oven light.
See page 29.

⑥ **Oven Air Vents**
Never block air vents during cooking.

⑦ **Control Panel**
See page 9.

⑧ **Name Plate**
Contains model and serial number of your oven.

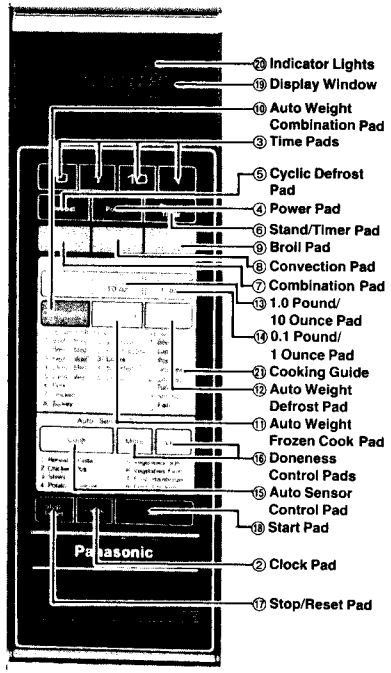
⑨ **Glass Ceramic Tray**
Must be placed in the oven before cooking.

⑩ **Roller Ring**
Must be placed in the oven before cooking.

Control Panel

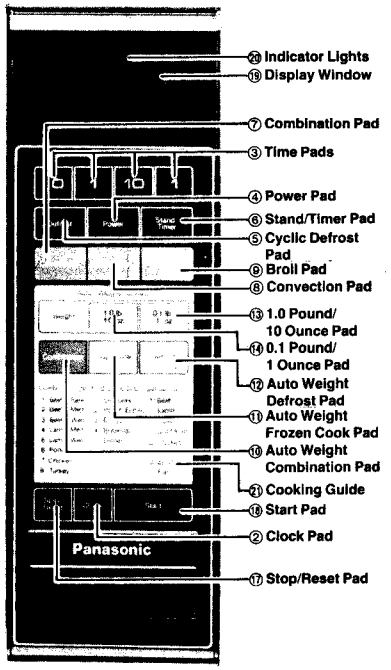
NE-9970, NE-9970C

① Controls with Auto Count-up Feature



NE-9870, NE-9870C

① Controls with Auto Count-up Feature



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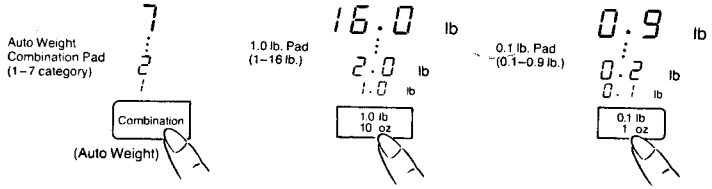
Controls

❶ Auto Count Up:
The Time, Power, Combination, Convection, Broil, Auto Sensor, Auto Weight Defrost Category, Auto Weight Combination Cook Category, Auto Weight Frozen Cook Category, 1.0 lb./10 oz., and 0.1 lb./1 oz. pads are all equipped with the Auto Count Up feature. By holding your finger on the pad, the readout in the display window will count up. After reaching the maximum function, the display *will return* to the starting point and continue to count up. To stop the readout simply *remove* your finger from the pad.

Example: Auto Weight Combination Pad, 1.0 lb./10 oz. Pad, 0.1 lb./1 oz. Pad

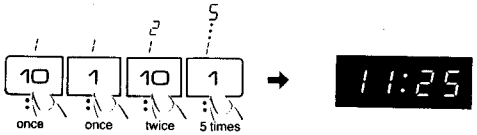


❷ Clock Pad:
When oven is first plugged in, the colon in the display window will blink.

To set clock

Step 1. Enter time of day by pressing appropriate Time Pads.
►Time appears in display window; colon is blinking.

Example: To set 11:25 (a.m. or p.m.),
Touch Time Pads from left to right as follows:



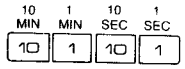
Step 2. Touch Clock Pad.
►Colon stops blinking; time of day is entered and locked into display.

Clock

NOTES ON CLOCK SETTING
1. Clock must be set before oven will operate.
2. To reset time of day touch Clock Pad twice to clear the time. Colon will begin to blink. Enter the correct time of day by following the above procedures.
3. The clock will keep the time of day as long as oven is plugged in and electricity is supplied.

❸ Time Pads:

1. Basic Time Setting—Broil, Stand/Timer and All Microwave power levels except LOW.

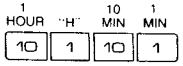


The Pads serve as a 10 minute pad, 1 minute pad, 10 second pad and 1 second pad from the left, and can be programmed up to 99 minutes 99 seconds.

Example 1: To set 13 minutes 45 seconds
Touch:
10 MIN Pad: once
1 MIN Pad: 3 times
10 SEC Pad: 4 times
1 SEC Pad: 5 times

Example 2: To set 30 seconds
Touch:
10 SEC Pad: 3 times

2. LOW Microwave power, Combination and Convection



The Pads serve as a 1 hour pad, an inoperable pad, 10 minute pad and 1 minute pad from the left, and can be programmed up to 9 hours 99 minutes.

Example 1: To set 2 hours 25 minutes
Touch;
1 HOUR Pad: twice
10 MIN Pad: twice
1 MIN Pad: 5 times

Example 2: To set 45 minutes
Touch;
10 MIN Pad: 4 times
1 MIN Pad: 5 times

Note: When LOW Microwave power, Combination and Convection are programmed for 1 hour or longer, the time in the display window counts down minute by minute. When less than 59 minutes (59 00) remain, the time counts down second by second.

❹ Power Pad:
Automatically counts down from High to Warm by holding your finger on the Pad. The following is the approximate wattage for each power level.

Power

HIGH power	(700 watts/Full power)	M. LOW power	(360 watts/50% power)
M. HIGH power	(650 watts/90% power)	LOW power	(200 watts/30% power)
MEDIUM power	(490 watts/70% power)	WARM power	(70 watts/10% power)

❺ Cyclic Defrost Pad:
When DEFROST is selected, the automatic cycle divides the defrosting time into 8 periods which alternate between defrost and stand. The wattage of DEFROST power is approximate 245 watts/35% power.
Note: When oven is operating at DEFROST power, DEF indicator light blinks. The light remains on, but does not blink during built-in stand time.

Defrost

❻ Stand/Timer Pad:
This feature allows you to program a Stand Time after cooking is complete. This pad can also be used to program the oven as a minute timer.

Stand/ Timer

❼ Combination Pad:

Automatically counts-up for the desired Combination setting. There are 4 Combination settings. Refer to the Panasonic Cookbook for proper use.

Combination

❽ Convection Pad:

Automatically counts-up in 25°F. increments from 200°F. to 475°F. Touching Convection pad during preheating or cooking shows the temperature you programmed in display window.

Convection

Auto Preheat (Convection):

Automatically preheats the oven to the desired convection oven temperature. Set oven temperature and touch the Start Pad. "P" appears in display window. When oven is preheated, three beeps will sound and "P" will begin to blink in display window.

If oven door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.

❾ Broil Pad:

Automatically counts-up for the desired Broil Setting. There are 2 Broil settings. Refer to the Panasonic Cookbook for proper use.

Broil

Auto Preheat (Broil):

Automatically preheats the oven. Press Broil Pad to select the setting 1 or 2, and touch the Start Pad. "P" appears in display window. When oven is preheated, three beeps will sound and "P" will begin to blink in display window.

❿ Auto Weight Combination Pad:

This feature allows you to cook meat or poultry by weight. Choose a cook category and program the weight of the food. Weight must be programmed in pounds and tenths of a pound. For further information on Auto Weight Combination Cook, refer to Introduction in the Panasonic Cookbook.

Combination
(Auto Weight)

Press this pad to select the appropriate cook category 1 through 7. Listed below are the recommended foods and maximum weight limits for each category.

Category	Food	Maximum Weight
1	Beef (Rare)	8 lb.
2	Beef (Medium)	8 lb.
3	Beef (Well)	8 lb.
4	Lamb (Medium)	6 lb.
5	Lamb (Well)	6 lb.
6	Pork-Bone-In and Boneless Loin Roast	6 lb.
7	Whole chicken, Whole turkey	16 lb.

Note: 1) The shape and size of the food will determine the maximum weight the oven can accommodate.
2) Although the touch controls of some ovens will accept entries up to 8 lbs., the best cooking results for lamb and pork are obtained with weights of 6 lbs. and less.

⓫ Auto Weight Frozen Cook Pad:

This feature allows you to cook frozen convenience foods by weight. Choose a frozen cook category and program the weight of the food. Weight must be programmed in ounces. For further information on Auto Weight Frozen Cook, refer to Introduction in the Panasonic Cookbook. Press this pad to select the appropriate cook category 1 through 5. Listed below are the recommended foods and maximum weight limits for each category.

Froz-Cook

Category	Food	Maximum Weight
1	Frozen Vegetables	32 oz.
2	Frozen Entrees in a Pouch	16 oz.
3	Frozen Entrees	32 oz.
4	Frozen Breakfasts	16 oz.
5	Frozen Dinners	32 oz.

⓬ Auto Weight Defrost Pad:

This feature allows you to defrost meat, poultry or seafood by weight. Choose a defrosting category and program the weight of the food. Weight must be programmed in pounds and tenths of a pound. For further information on Auto Weight Defrost, refer to Introduction in the Panasonic Cookbook.

Defrost
(Auto Weight)

Press this pad to select the appropriate defrosting category 1 through 3. Listed below are the recommended foods and maximum weight limits for each category.

Category	Food	Maximum Weight
1	Ground meats, Roasts, Ribs, Stew meat, Chops, Steaks, Frankfurters	8 lb.
2	Whole or split cornish hens, Whole or cut-up chicken, Whole turkey, Turkey breast	16 lb.
3	Shrimp (medium), Sea scallops, Whole fish	3 lb.

Note: The shape and size of the food will determine the maximum weight the oven can accommodate.

⓭ 1.0 Pound/10 Ounce Pad:

Press this pad to program the weight of your food by whole pounds or by 10 ounces. For Auto Weight Combination Cook and Auto Weight Defrost this pad is used in the pound capacity. For Auto Weight Frozen Cook, this pad is used in the 10 ounce capacity. An Auto Weight feature must be selected before putting in the weight of the food.

1.0 lb
10 oz

⓮ 0.1 Pound/1 Ounce Pad:

Press this pad to program the weight of your food by tenths of a pound or by ounces. To convert ounces into tenths of a pound, see conversion chart in the Introduction of the Panasonic Cookbook. For Auto Weight Combination Cook and Auto Weight Defrost this pad is used in the tenths of a pound capacity. For Auto Weight Frozen Cook this pad is used in the single ounce capacity. An Auto Weight feature must be selected before putting in the weight of the food.

0.1 lb
1 oz

⓯ Auto Sensor Control Pads: (NE-9970, NE-9970C only)

Press desired control pad designated for your food.

Cook

The appropriate food categories for each Auto Sensor Cycle are as follows. For further information, refer to Introduction and Auto Sensor recipes in the Panasonic Cookbook.

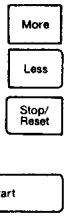
CYCLE	FOOD	CYCLE	FOOD
A1	Canned Foods, Leftovers, Noodles	A5	Beans, Cauliflower, Peas
A2	Chicken Pieces	A6	Fish, Broccoli
A3	Stews	A7	Frozen Hamburgers
A4	Potato, Carrot	A8	Frozen Chicken Pieces

⑯ Doneness Control Pads: (NE-9970, NE-9970C only)
Preferences for food doneness vary with each individual. After having used the Auto Sensor Cycles a few times, you may decide you would prefer your food cooked to a different doneness. By using the Doneness Control, the Auto Sensor programs can be adjusted to cook food for a longer or shorter time.

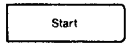
Note: If you are satisfied with the result of cooking with the built-in Auto Sensor program, you do not need to use these pads.

More Pad:
Use when you want your food to be cooked a little more than the built-in auto program.

Less Pad:
Use when you want your food to be cooked a little less than the built-in auto program.



⑰ Stop/Reset Pad:
Before cooking: One tap clears your instructions.
During cooking: One tap temporarily stops the cooking process. Another tap cancels all your instructions and time of day appears in display window.



⑱ Start Pad:
One tap allows oven to begin functioning. If door is opened or Stop/Reset Pad is tapped once during oven operation, Start Pad must be touched again to restart oven.

⑲ Display Window:
Displays time of day before or after cooking, time during cooking, weight, cooking functions, and power levels.

Digital Readout Display:

⑳ Indicator Lights:
An indicator light will turn on when a specific power level and/or the following functions are selected: AUTO WEIGHT DEF, AUTO WEIGHT FROZ COOK, AUTO WEIGHT COMB, CONV, COMB, BROIL, AUTO COOK (NE-9970, NE-9970C only) and DEF.

㉑ Cooking Guide:
Easy reference for Auto Weight Combination, Auto Weight Frozen Cook, Auto Weight Defrost and Auto Sensor.

㉒ Opening Door:
Opening the door during cooking will stop the cooking process without canceling the program. Cooking resumes as soon as the door is closed and Start Pad is touched. The oven light will stay on or turn on whenever the door is opened.

㉓ Beep Sound:
When a pad is touched correctly, a beep will be heard. If a pad is touched and no beep is heard, the unit has not or cannot accept the instruction. The oven will beep twice between programmed stages. During Auto Weight Defrost, oven will beep two times during total defrosting time. These beeps are a signal to turn, rotate or manipulate food. At the end of preheat, the oven will beep 3 times. At the end of any complete program, the oven will beep 5 times.

Summarized Directions

Microwave Operation

Auto Sensor Cooking: (NE-9970, NE-9970C only)

	Cook
Step 1 Step 2	Set Auto Sensor Cycle (A1–A8). Touch Start Pad.

Time Cooking:

	One-Stage Cooking	Two-Stage Cooking	Three-Stage Cooking
Step 1 Step 2 Step 3 Step 4 Step 5 Step 6 Step 7	Set Power. Set Time. Touch Start pad.	Set first Power. Set first Time. Set second Power. Set second Time. Touch Start Pad.	Set first Power. Set first Time. Set second Power. Set second Time. Set third Power. Set third Time. Touch Start Pad.
	Defrost Cycle	**Defrost-to-Cook Cycle**	**Defrost-to-Two Stage Cook Cycle**
Step 1 Step 2 Step 3 Step 4 Step 5 Step 6 Step 7	Touch Defrost Pad. Set Time. Touch Start Pad.	Touch Defrost Pad. Set Time. Set second Power. Set second Time.. Touch Start Pad.	Touch Defrost Pad. Set Time. Set second Power. Set second Time. Set third Power. Set third Time. Touch Start Pad.

Convection Operation

Auto Preheat		Time Cooking	
Step 1 Step 2 Step 3 Step 4 Step 5	Set desired Oven Temp. Touch Start Pad. When unit is preheated, place food in oven. Set Time. Touch Start Pad.	Step 1 Step 2 Step 3	Set Oven Temp. Set Time. Touch Start Pad.

Broil Operation

Auto Preheat		Time Cooking	
Step 1 Step 2 Step 3 Step 4 Step 5	Set Broil Category (1 or 2) Touch Start Pad. When unit is preheated, place food in oven. Set Time. Touch Start Pad.	Step 1 Step 2 Step 3	Set Broil Category (1 or 2). Set Time. Touch Start Pad.

Combination Operation

Auto Weight Combination **Combination Cooking**

Auto Weight Combination Cooking		Combination Cooking	
Step 1 Step 2 Step 3	Set Auto Combination Cycle (C1–C7). Set Weight. Touch Start Pad.	Step 1 Step 2 Step 3	Set Combination Setting 1–4. Category 1 or 2 Set Time. Touch Start Pad.

Microwave

Microwave cooking lets you defrost foods quickly, prepare delicious stews, savory casseroles, and vegetables that come out tender and colorful. It's also an ideal and easy way to reheat leftovers that taste as though they were freshly prepared.

Note: 1) See cooking utensils section in your Panasonic Cookbook or page 11 or this manual.
2) Do not use recycled paper products in the oven. They may contain impurities which could cause the paper to create sparking (arcing), and this could result in a fire during oven operation.
3) Do not operate oven empty.

Auto Sensor Cooking (NE-9970, NE-9970C only)

Auto Sensor Cooking allows you to cook most of your favorite foods without having to select cooking times and powers. The oven does it all automatically.

For proper cooking results on Auto Sensor cycles, be sure to cover foods securely with plastic wrap or place foods in a microwavesafe casserole dish with a proper fitting lid.

For further information refer to the Introduction in the Panasonic Cookbook and Auto Sensor recipes.

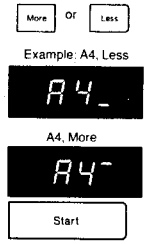
Step 1

Press the Auto Sensor Cook Pad until the desired Auto Cycle number (A1–A8) appears in display window.

▶Clock time disappears. The selected Auto Sensor Cycle number appears in display window. The AUTO COOK indicator lights also appear in display window.

If Desired

Touch More Pad or Less Pad for the doneness of your food.



▶Selected doneness symbol appears in display window.
Note: Doneness Control can not be used with A1 cycle.

Step 2

Touch Start Pad.

After Oven Starts:

▶MICROWAVE ACTIVITY STARTS. The COOK indicator light starts to blink. The Auto indicator light stays on. The turntable rotates. Oven light turns on.

▶WHEN AUTO SENSOR CYCLE (A2 THROUGH A8) DISAPPEARS FROM DISPLAY WINDOW, the oven beeps twice. The remaining cooking time appears in display window and begins to count down. The COOK indicator light continues to blink. The Auto indicator light stays on. (If doneness selection was made, its symbol disappears.)
Note: On cook A1, no time will appear in display window. The COOK indicator light stops blinking and oven beeps 5 times. The cooking cycle is complete.

▶WHEN AUTO SENSOR COOK CYCLE IS COMPLETED, the oven beeps 5 times and shuts off. Indicator and oven lights turn off. The turntable stops rotating. The time of day reappears in display window.

NOTES ON AUTO SENSOR COOKING:

The Auto Sensor system works by detecting a build-up of steam on the humidity sensor. As foods cook in the microwave, steam is produced. When foods are covered, the steam will build up and escape from the dish in a burst. This burst of steam is detected by the humidity sensor and then the oven automatically calculates the remaining cooking time.

When an Auto Sensor Cycle is selected, Cook A1 through A8 will appear in the display window. The oven door should not be opened for longer than one minute when Cook A1 through A8 appears in the display window. Opening the door may cause inaccurate cooking results. Once the steam is detected, the remaining cooking time immediately appears in the display window and begins to count down. At this time, the oven door may be opened, to stir, turn or add foods. On Cook A1, no time will appear in display window.

- Auto Sensor Cooking is successful with the foods and recipes found in the cookbook and marked with the Symbol [A]. Because of the vast differences in food composition, recipes and charts without the Auto Sensor symbol should be prepared in your microwave oven using the Power and Time features.
- When cooking by Auto Sensor, the oven door should not be opened for longer than 1 minute while Cook A1–A8 is in display window. Opening the door for longer than 1 minute may cause inaccurate cooking results. Once time appears in display window, the door may be opened and foods can be stirred or turned.
- All foods for Auto Sensor Cooking are taken from their normal storage place.
- Before using Auto Sensor feature, make sure glass ceramic turntable in the oven is dry to assure best Auto Sensor Cooking results.
- Room temperature of heat surrounding the oven should not be above 95°F when using Auto Sensor Cooking feature. Inaccurate cooking may result.
- Foods less than 3 or 4 ounces should be cooked by Power and Time features, not by the Auto Sensor Cooking Cycle. The appropriate food categories for each Auto Sensor Cycle are as follows. For further information, refer to Introduction and Auto Sensor recipes in the Panasonic Cookbook.

CYCLE	FOOD	CYCLE	FOOD
A1	Canned Foods, Leftovers, Noodles	A5	Beans, Cauliflower, Peas
A2	Chicken Pieces	A6	Fish, Broccoli
A3	Stews	A7	Frozen Hamburgers
A4	Potato, Carrot	A8	Frozen Chicken Pieces

- When the remaining cooking time is over 60 minutes the time will appear as hours and minutes.
Example: If the cooking time is 94 minutes, display window will show 1H34. The seconds will not visibly count down in display window until 59 minutes remain. The time in display window will then show in minutes and seconds, and count down in seconds.

- Preferences for food doneness vary with each individual.
After having used the Auto Sensor Cycles a few times, you may decide you would prefer your food cooked to a different doneness. By using the Doneness Control Pads, the Auto Sensor programs can be adjusted to cook food for a longer or shorter time.
Note: *If you are satisfied with the result of cooking with the built-in Auto Sensor program, you do not need to use these pads.
*Doneness Control Pads can be used with Cook A2–A8 cycles.
- You may program a desired power level and/or stand time after Auto Sensor programs Cook A1 through A8.

Examples are:

First Stage	Second Stage
Auto Sensor Cook, A3 Auto Sensor Cook, A5	Stand, 5 minutes WARM, 20 minutes

- If Auto Sensor Cooking is programmed a short time after Convection or Combination Cooking, "HOT" will appear in display window. The HOT sign indicates that the oven cavity is too hot for the proper operation of the Auto Sensor Function. While the HOT sign is in display window, the unit cannot be operated by Auto Sensor, and room temperature air is circulated in the oven cavity to cool it. You may leave the door ajar to cool the unit. After the unit is cooled, the oven beeps 5 times and time of day appears in display window. Auto Sensor cycles can now be programmed.

Microwave

Time Cooking

Cyclic Defrost

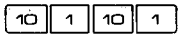
Step 1

Touch Cyclic Defrost Pad.

►Clock time disappears. DEF indicator light turns on.

Step 2

Set defrost time by pressing Time Pads.



►Defrost time appears in display window in minutes and seconds.

Step 3

Touch Start Pad.

After Oven Starts:

►MICROWAVE DEFROSTING BEGINS. Turntable rotates. Oven light turns on. DEF indicator light begins to alternately blink and glow. Defrosting time counts down second by second.

►WHEN DEFROSTING IS COMPLETED, oven beeps five times and shuts off. Turntable stops rotating. DEF indicator light and oven light turn off. Time of day appears in display window.

Note: Two more stages can be programmed after Cyclic Defrost.

One Stage Cooking

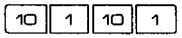
Step 1

Select cooking power by pressing Power Pad.

►Clock time disappears. Selected power indicator light turns on.

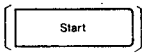
Step 2

Set cooking time by pressing Time Pads.



►Cooking time appears in display window in minutes and seconds.

[Step 3. Touch Start Pad.]



OR

Two Stage Cooking

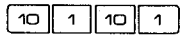
Step 3

Before touching Start Pad, select second cooking power by pressing Power Pad.

►Previously selected time and power indicator light disappear from display window. Second stage power indicator light turns on.

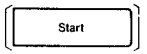
Step 4

Set second stage cooking time by pressing Time Pads.



►Second stage cooking time appears in display window.

[Step 5. Touch Start Pad.]



OR

Microwave

Three Stage Cooking

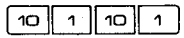
Step 5

Before touching Start Pad, select third stage cooking power by pressing Power Pad.

►Previously selected time and power indicator light disappear from display window. Third stage power indicator light turns on.

Step 6

Set third stage cooking time by pressing Time Pads.



►Third stage cooking time appears in display window.

Step 7

Touch Start Pad.

After Oven Starts:

►MICROWAVE COOKING BEGINS. Turntable rotates. Third stage cooking time disappears and first stage cooking time reappears in the display window and begins to count down. First stage power indicator light turns on and starts to blink. Second stage power indicator light turns on. Third stage power indicator light remains on.

►WHEN THE FIRST STAGE COOKING TIME HAS ELAPSED, a beep sounds twice. Second stage cooking time reappears in the display window and begins to count down. First stage power indicator light turns off. Second stage power indicator light starts to blink. Third stage power indicator light remains on.

►WHEN THE SECOND STAGE COOKING TIME HAS ELAPSED, a beep sounds twice. Third stage cooking time reappears in the display window and begins to count down. Second stage power indicator light turns off. Third stage power indicator light starts to blink.

►WHEN THE THIRD STAGE COOKING TIME HAS ELAPSED, five beeps are heard and oven turns off. Third stage power indicator light turns off. Oven light turns off and turntable stops rotating. Time of day reappears in the display window.

NOTES ON TIME AND POWER COOKING:

1. When LOW power is programmed "H" meaning Hour appears in the display window. Cooking time can only be programmed in hours and minutes.

2. When LOW power is programmed for 1 hour or longer, the time will count down minute by minute. When less than 59 minutes (59 00) remain, the time will count down second by second.

3. Examples of 2 and 3 stage programmed cooking are:

First Stage	Second Stage	Third Stage
HIGH, 8 minutes	Stand, 3 minutes	
HIGH, 9 minutes	MEDIUM-LOW, 20 minutes	
HIGH, 6 minutes	MEDIUM, 24 minutes	WARM, 15 minutes
HIGH, 10 minutes	MEDIUM, 20 minutes	Stand 5 minutes
MEDIUM-LOW, 20 minutes	HIGH, 10 minutes	LOW, 50 minutes

Microwave

Auto Weight Frozen Cook

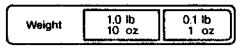
Step 1

Press Auto Weight Frozen Cook Category Pad to select Froz-Cook Category 1 through 5.

▶Clock time disappears. The selected category number appears in display window. AUTO WEIGHT FROZ COOK and ounces (oz) indicator light turns on.

Step 2

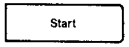
Set the weight of your frozen food in ounces by pressing 1.0 Pound/ 10 Ounce Pad and/or 0.1 Pound/ 1 Ounce Pad.



▶Category number disappears and the weight selected appears in display window.

Step 3

Touch Start Pad.



After Oven Starts:

▶MICROWAVE COOKING BEGINS. Turntable rotates. Oven light turns on. Froz Cook light begins to blink. AUTO WEIGHT indicator light stays on. Weight and ounce indicator in display disappear. Cooking time appears and counts down second by second.

▶WHEN COOKING IS COMPLETED, oven beeps five times and shuts off. Turntable stops rotating. The indicator light and oven light turn off. Time of day appears in display window.

NOTES ON AUTO WEIGHT FROZEN COOK:

1. Categories for Auto Weight Frozen Cook are:

Category	Food	Maximum Weight
1	Frozen Vegetables	32 oz.
2	Frozen Entrees in a Pouch	16 oz.
3	Frozen Entrees	32 oz.
4	Frozen Breakfasts	16 oz.
5	Frozen Dinners	32 oz.

2. Stand or a power level can be programmed after Auto Weight Frozen Cook.
   For example: Auto Weight Frozen Cook→WARM power.
3. For further information on Auto Weight Frozen Cook refer to Introduction in the Panasonic Cookbook.

Note: The shape and size of the food will determine the maximum weight the oven can accommodate.

Microwave

Auto Weight Defrost

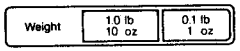
Step 1

Press Auto Weight Defrost Pad to select Defrost Category 1 through 3.

▶Clock time disappears. The selected category number appears in the display window. AUTO WEIGHT DEF and pounds (lb) indicator light turns on.

Step 2

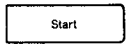
Set the Weight of your meat in pounds and tenths of a pound by pressing 1.0 Pound/10 Ounce Pad and/or 0.1 Pound/1 Ounce Pad.



▶Category number disappears and the weight selected appears in display window.

Step 3

Touch Start Pad.



After Oven Starts:

▶MICROWAVE DEFROSTING BEGINS. Turntable rotates. Oven light turns on. DEF light begins to blink. AUTO WEIGHT indicator light stays on. Weight and pound indicator in display disappear. Defrosting time appears and counts down second by second.

▶WHEN DEFROSTING IS COMPLETED, oven beeps five times and shuts off. Turntable stops. The indicator light and oven light turn off. Time of day appears in display window.

▶During AUTO WEIGHT DEFROST, oven will beep twice two times during total defrosting time. These beeps are a signal to turn, rotate or manipulate food.

NOTES ON AUTO WEIGHT DEFROST:

1. Categories for Auto Weight Defrost are:

Category	Food	Maximum Weight
1	Ground meats, Roasts, Ribs, Stew meat, Chops, Steaks, Frankfurters	8 lb.
2	Whole or split cornish hens, Whole or cut-up chicken, Whole turkey, Turkey breast	16 lb.
3	Shrimp (medium), Sea scallops, Whole fish	3 lb.

2. Stand time or power level may be programmed after Auto Weight Defrost.
3. For further information on Auto Weight Defrost refer to Introduction in the Panasonic Cookbook.

Note: The shape and size of the food will determine the maximum weight the oven can accommodate.

Convection

For information on cooking utensils, see the Introduction of the Panasonic Cookbook and page 11 of this manual.

Auto Preheating

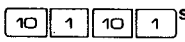
For your convenience, this oven is equipped with Auto Preheating feature so that you don't have to set preheating time or reset oven temperature after preheating for cooking.
Preheat when indicated in recipes and charts.
CAUTION: DO NOT open door during preheating.

Step 1. Press Convection Pad for desired oven temperature.
—Clock time disappears. CONV indicator light turns on. Selected oven temperature appears in display window.

Step 2. Touch Start Pad.
—Oven light turns on. Turntable begins to rotate. Preheating starts and CONV indicator light begins to blink. "P" for "PREHEATING" appears and remains in display window.
—When preheating is completed, oven beeps three times.
Oven light stays on and turntable continues to rotate. CONV indicator light and "P" for "PREHEATING" begin to blink.

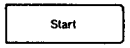
Note: 1) After completion of preheating, be sure to open oven door and place food inside oven.
If oven door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.
2) Oven should be preheated with the Glass Ceramic Tray in place.
3) For more detailed information on when to preheat, refer to your Panasonic Cookbook.

Time Cooking



1 HOUR "H" 10 MIN 1 MIN

Step 1. After Auto Preheating, set cooking time by pressing appropriate time Pad.
—"P" disappears and cooking time appears in display window.
OR If preheating is not required, place food inside oven. Press Convection Pad for desired oven temperature. Set cooking time by pressing Time Pads.



Step 2. Touch Start Pad.
—Oven light turns on. Convection cooking begins and CONV indicator light begins to blink. Turntable begins to rotate. Cooking time counts down.

Note: 1) When selected cooking time is less than one hour, time counts down second by second.
2) When selected cooking time is over one hour, time counts down minute by minute until only "59 00" (59 minutes) remain. Display then indicates minutes and seconds and counts down second by second.
—When cooking is completed, oven beeps five times and shuts off automatically. Turntable stops. CONV indicator light and oven light turn off. Time of day appears in display window.
3) For recipes that do not require preheating, convection temperature must be selected before pressing Time Pads.

CAUTION: Door will get hot during convection cooking. Please handle door carefully.

Combination

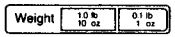
A remarkable development in technology enables Panasonic to bring you an oven that combines the best features of both microwave and convection cooking. It cooks foods with speed and accuracy, while roasting and evenly browning them to juicy, tender perfection.

Note: 1) Do not use metal containers. For information on cooking utensils see the Introduction of the Panasonic Cookbook and page 11 of this manual.
2) Do not operate oven empty. The microwave energy will reflect continuously throughout the oven if no food or water is present to absorb the energy.

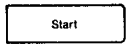
Auto Weight Combination Cooking

(Auto Weight)

Step 1. Select appropriate Auto Weight Combination Cook program by pressing Combination (Auto Weight Control) Pad.
The Combination Pad is equipped with an automatic count up feature. If the pad is pressed continuously, C1 through C7 will count up in display window.
—Clock time disappears. The AUTO indicator light, WEIGHT indicator light and COMB indicator light turn on.
The selected Auto Weight Combination Cook program, appears in display window.



Step 2. Set Weight of Food.
Selected Auto Combination program disappears and selected weight appears in display window.



Step 3. Touch Start Pad.
—Oven light turns on. Turntable begins to rotate. Combination cooking begins. COMB indicator light begins to blink while AUTO WEIGHT indicator light stays on. Selected weight disappears and cooking time appears in display window and begins to count down.
—When cooking is completed, oven beeps five times and shuts off automatically. Turntable stops. AUTO WEIGHT and COMB indicator lights turn off. Oven light turns off. Time of day appears in display window.

NOTES ON AUTO WEIGHT COMBINATION:

1. Categories for Auto Weight Combination are:

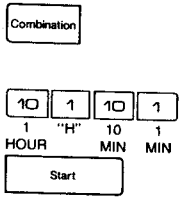
Category	Food	Maximum weight
1	Beef (Rare)	8 lb.
2	Beef (Medium)	8 lb.
3	Beef (Well)	8 lb.
4	Lamb (Medium)	6 lb.
5	Lamb (Well)	6 lb.
6	Pork-Bone-In and Boneless Loin Roast	6 lb.
7	Whole chicken or Whole turkey	16 lb.

2. Stand time or a power level can be programmed after Auto Weight Combination Cook.
For example: Auto Weight Combination Cook→WARM power
3. For further information on Auto Weight Combination refer to Introduction in the Panasonic Cookbook.

Note: 1) The shape and size of the meat will determine the maximum weight the oven can accommodate.
2) Although the touch controls of some ovens will accept entries up to 8 lbs., the best cooking results for lamb and pork are obtained with weights of 6 lbs. and less.

Combination

Time Cooking



Step 1. Select combination cooking program by pressing Combination Pad.
—Clock time disapears. COMB indicator light turns on. Selected combination cooking program appears in display window.

Step 2. Set cooking time by pressing Time Pad.
—Previously selected combination cooking program disappears. Cooking time appears in display window.

Step 3. Touch Start Pad.
—Oven light turns on. Combination cooking begins and COMB indicator light begins to blink. Turntable begins to rotate. Cooking time counts down.

Note: 1) When selected cooking time is less than one hour, time counts down second by second.
2) When selected cooking time is over one hour, time counts down minute by minute until only "59 00" (59 minutes) remain. Display then indicates minutes and seconds and counts down second by second.

—When cooking is completed, oven beeps five times and shuts off automatically. Turntable stops. COMB indicator light and oven light turn off. Time of day appears in display window.

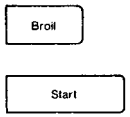
CAUTION: Door will get hot during Auto Weight Combination Cooking and Combination Time Cooking. Please handle door carefully.

Broil

For information on cooking utensils, see the Introduction of the Panasonic Cookbook and page 11 of this manual.

Auto Preheating

For your convenience, this oven is equipped with Auto Preheating feature so that you don't have to set preheating time or reset oven temperature after preheating for cooking.
Preheat when indicated in recipes and charts.

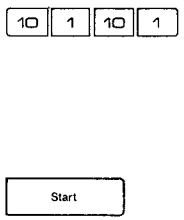


Step 1. Press Broil Pad for desired Broil category (1 or 2).
—Clock time disappears. Broil category (1 or 2) and BROIL indicator light turn on.
Note: Place Oven Broiling Rack in upper rack guides before you start preheating.

Step 2. Touch Start Pad.
—Oven light turns on. Turntable rotates. Auto Preheating starts and BROIL indicator blinks. "P" for "PREHEATING" appears and remains in display window.
—When preheating is completed, oven beeps three times. "P" and BROIL indicator light blink.

Note: 1) If oven door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.
2) For more detailed information on when to preheat, refer to your Panasonic Cookbook.
3) After completion of preheating, be sure to open oven door and place food on. Broiling pan and place on oven Broiling Rack in the Oven.

Time Cooking



Step 1. After Auto Preheating, set cooking time by pressing Time Pads.
—"P" disappears and cooking time appears in display window.
OR: If preheating is not required, place food inside oven. Press Broil Pad for desired Broil category (1 or 2). Set cooking time by pressing Time Pads.

Step 2. Touch Start Pad.
— Oven light turns on. Turntable rotates. BROIL cooking begins and BROIL indicator light begins to blink.
Cooking time counts down second by second.

—When cooking is completed, oven beeps five times and shuts off automatically. Turntable stops. BROIL indicator light and oven light turn off. Clock time appears in display window.

Note: For recipes that do not require preheating, Broil category (1 or 2) must be selected before pressing Time Pads.

CAUTION: Door will get hot during Broil Cooking. Please handle door carefully.

Special Controls

Timer

Step 1

Touch Stand/Timer Pad.

Stand/ Timer

►Clock time disappears from display window.

Step 2

Set desired amount of time by pressing Time Pads.

10 1 10 1

►Selected amount of time appears in display window.
(A maximum of 99 minutes and 99 seconds may be programmed.)

Step 3

Touch Start Pad.

Start

After Oven Starts:

►NO COOKING ACTIVITY BEGINS. Turntable does not rotate. Oven light does not turn on. Only the time displayed starts to count down.
►WHEN PROGRAMMED TIME HAS ELAPSED, oven beeps five times. Time of day appears in display window.

Note: If oven door is opened during the timer function, the time in the display window will continue to count down.

Stand Time

Step 1

Program desired cooking program according to directions already given in this manual.

Desired Cooking Program

►Selected program and indicator light appear in display window.

Step 2

Touch Stand/Timer Pad.

Stand/ Timer

►Previously selected program and indicator lights disappear.

Step 3

Set desired amount of time by pressing Time Pads.

10 1 10 1

►Stand time appears in display window.
(A maximum of 99 minutes and 99 seconds may be programmed twice.)

Step 4

Touch Start Pad.

Start

After Oven Starts:

►DESIRED COOKING PROGRAM ACTIVITY BEGINS. Turntable rotates. Oven light turns on. Selected program appears in display window and indicator light blinks.
►WHEN is completed, turntable stops, oven beeps twice, and stand time counts down. Oven light turns on.
►AT END OF STAND TIME, oven beeps five times and shouts off.
Time of day appears in display window.

Note: If oven door is opened during the stand time, the time in the display window will continue to count down.
Stand time cannot be programmed after Broil category is set.

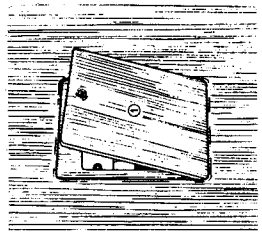
Care of Your Microwave/Convection Oven

1. The interior of the oven is stainless steel. Clean with a damp sudsy cloth, rinse with well wrung out cloth. To prevent baked-on soil, clean spatters as they occur. For hard to remove soil, clean with scouring pads or a nonabrasive scouring powder such as Bon Ami® (Faultless Starch Company).
2. Wash the glass ceramic oven tray in warm sudsy water. Cool tray completely before washing. If grease accumulates or is difficult to remove, the tray may be cleaned with a nonabrasive nylon mesh scouring pad and nonabrasive cleanser such as Bon Ami®.
3. Any spatters or food soils should be wiped off the oven door while they are still warm. Use a sudsy cloth, rinse with clear water and wipe dry.
4. The outside oven surfaces should be cleaned with soap and water, rinsed, and dried with a soft cloth. To prevent damage to the operating parts inside the oven, water should not be allowed to seep into the ventilation openings.

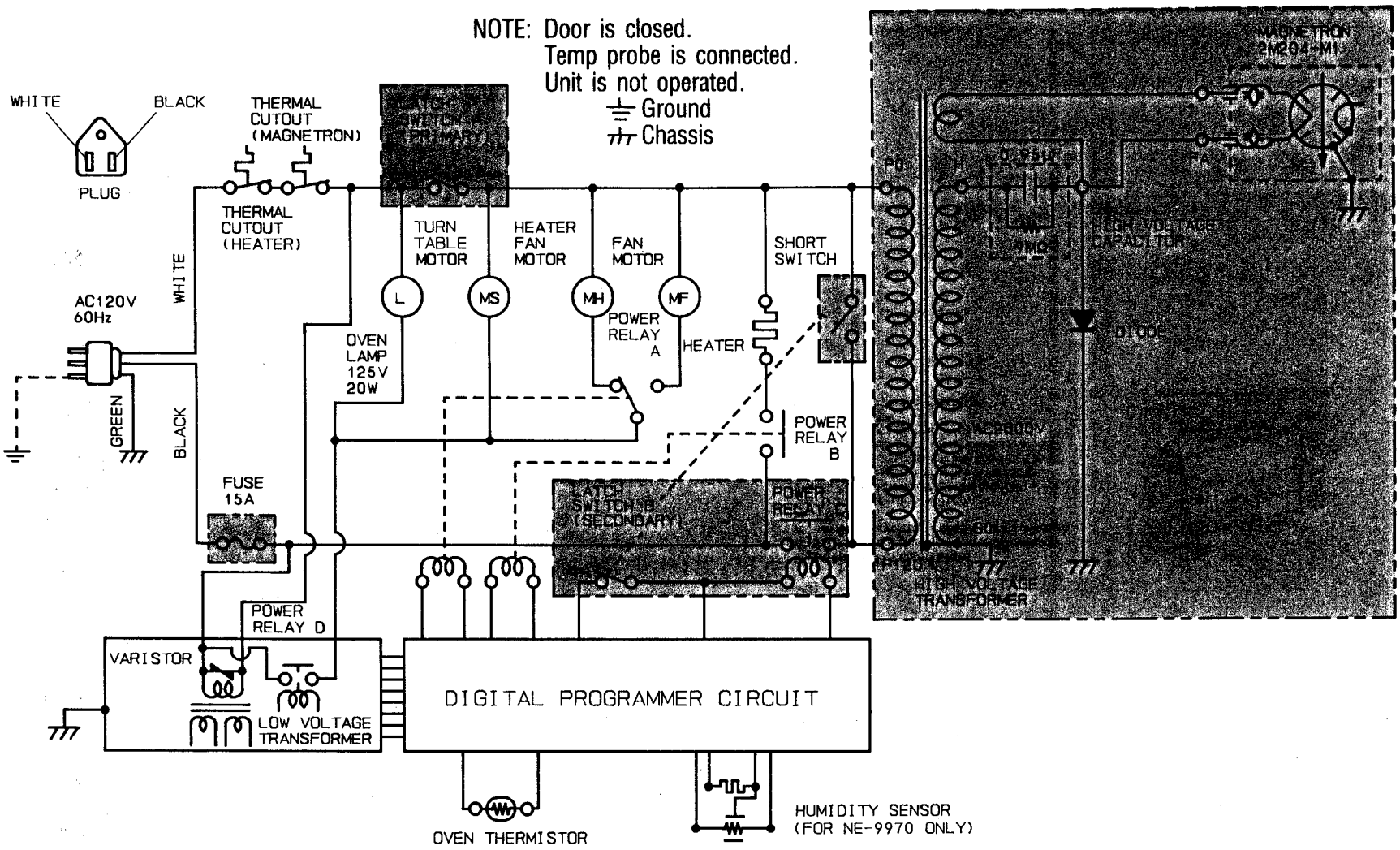
Replacement of Oven Light

When it becomes necessary to replace the oven light, you can replace it yourself. Please follow the directions below carefully.

Step 1. Turn off the oven and unplug it.
Step 2. Remove the screw from the oven light cover which is located on the top of the cabinet.
Step 3. Replace the oven light with only 115–125 V, 20 W, bulb. If this bulb is not available locally, contact the nearest authorized MESCO Servicenter.
Step 4. Replace the oven light cover.



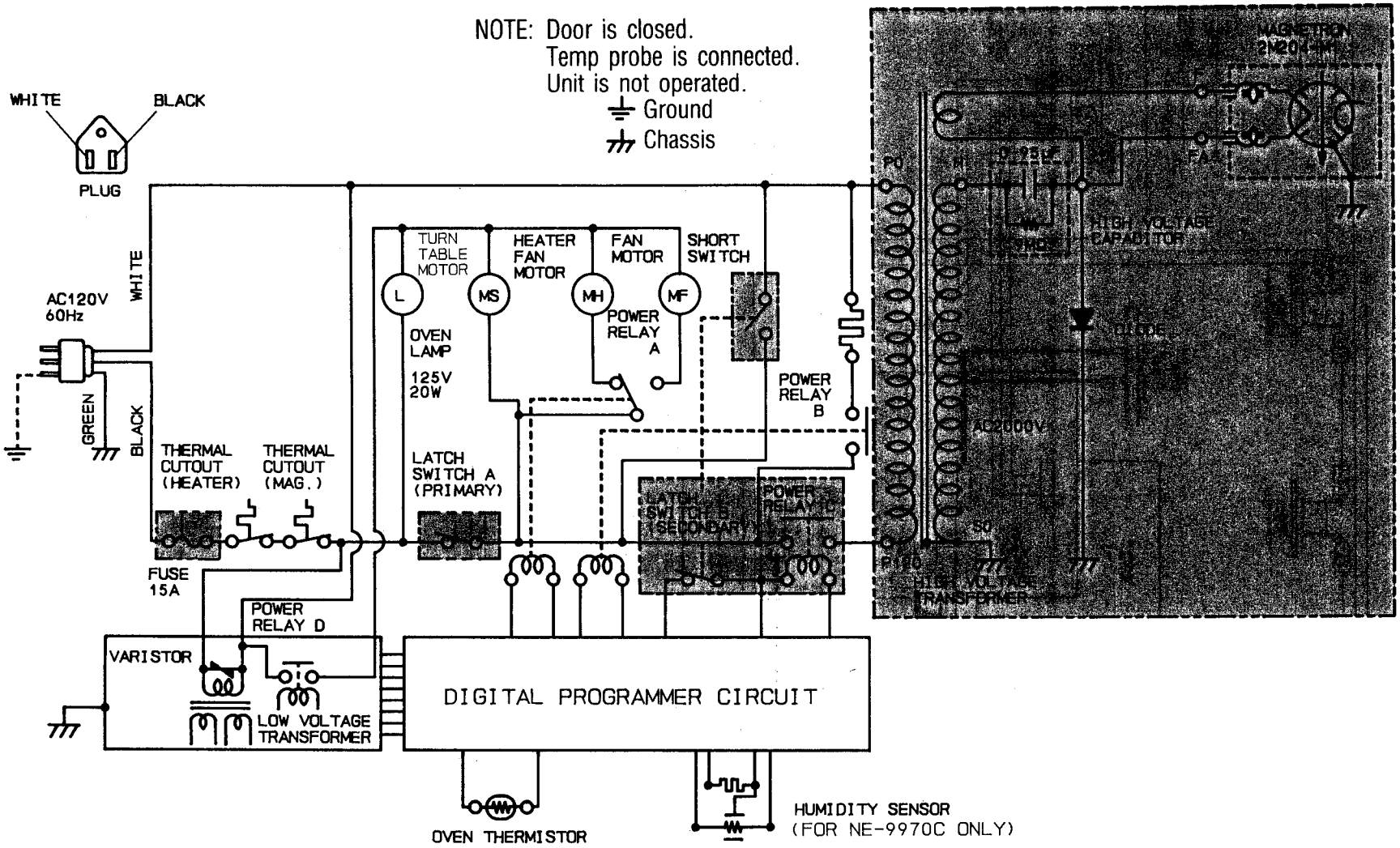
SCHEMATIC DIAGRAM (NE-9970, NE-9870)



IMPORTANT SAFETY NOTE: THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM *MICROWAVE RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS.* WHEN SERVICING, IT IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC DIAGRAM.

(S-2L, 2M APH)

Fig. 1

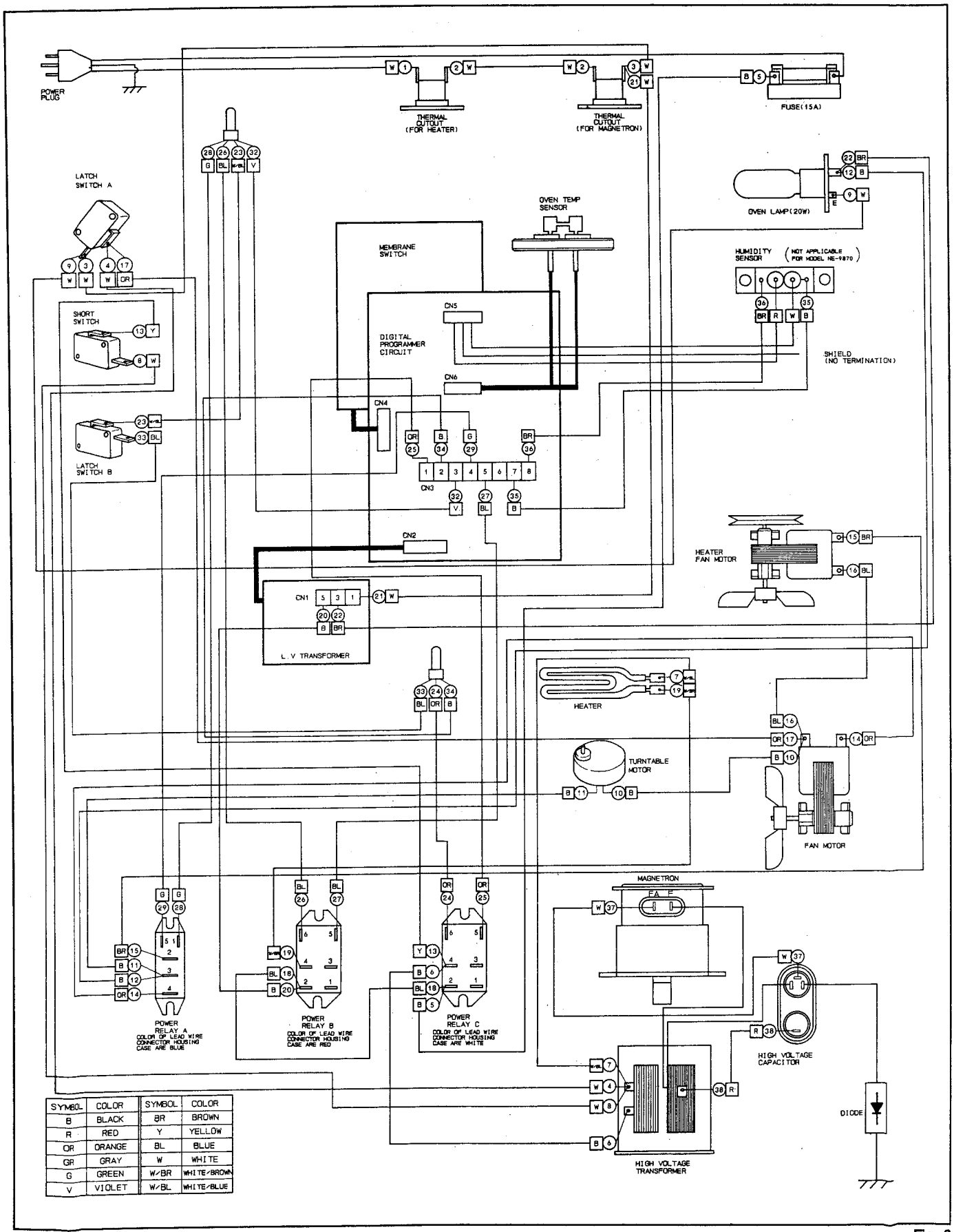


IMPORTANT SAFETY NOTE: THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM *MICROWAVE RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS.* WHEN SERVICING, IT IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC DIAGRAM.

(S-2L, 2M CPH)

Fig. 2

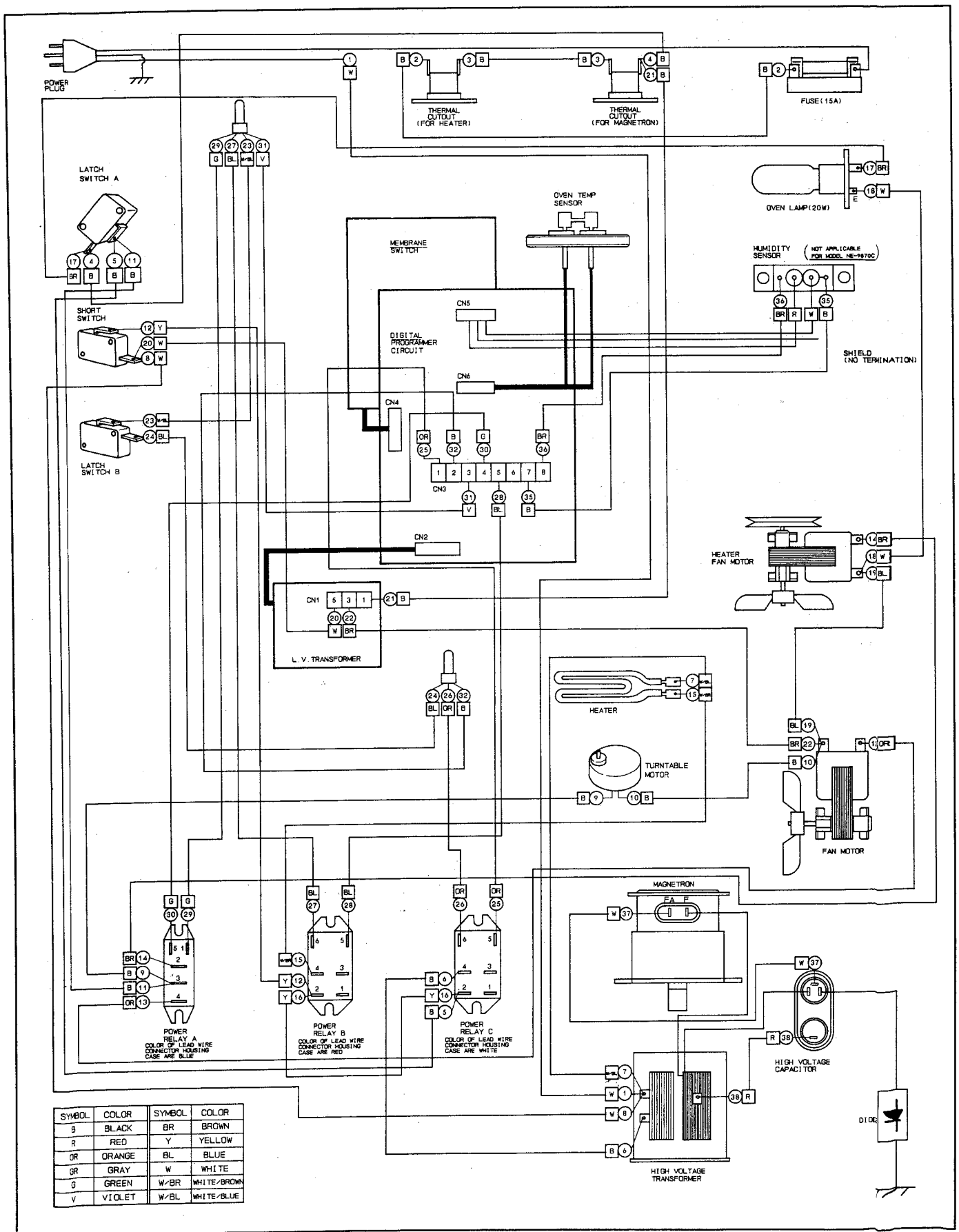
WIRING DIAGRAM (NE-9970, NE-9870)



SYMBOL	COLOR	SYMBOL	COLOR
B	BLACK	BR	BROWN
R	RED	Y	YELLOW
OR	ORANGE	BL	BLUE
GR	GRAY	W	WHITE
G	GREEN	W/BR	WHITE/BROWN
V	VIOLET	W/BL	WHITE/BLUE

Fig. 3

WIRING DIAGRAM (NE-9970C, NE-9870C)



SYMBOL	COLOR	SYMBOL	COLOR
B	BLACK	BR	BROWN
R	RED	Y	YELLOW
OR	ORANGE	BL	BLUE
GR	GRAY	W	WHITE
G	GREEN	W/BR	WHITE/BROWN
V	VIOLET	W/BL	WHITE/BLUE

Fig. 4

DESCRIPTION OF OPERATING SEQUENCE

1. Variable power cooking control

The coil of power relay C is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay C contacts in order to vary the output power of the microwave oven from "Warm" to "High" power.
One complete ON and OFF cycle of power relay C is 22 seconds.
The relation between indications on the control panel and the output of the microwave oven is as shown in **Fig. 5.**

NOTE: The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

2. Cyclic defrost

When Defrost power and defrosting time is selected and Start pad is tapped:

(A) The digital programmer circuit (DPC) divides the total defrosting time into 8 cycles of alternating ON-OFF intervals of defrosting power and standing periods. (See **Fig. 6**)

(B) During each defrosting period, power relay C is energized for 9 seconds and de-energized for 13 seconds by DPC. (See **Fig. 7**)

(C) During standing periods, power relay C is always open resulting in no microwave power.

NOTE: **Defrost time selected is converted into seconds by the DPC but display will show selected time in minutes and seconds as programmed. The total number of seconds is divided into 8 time periods. The remainder (seconds not equally divisible by 8) are added to the last standing time period.**

Example 1: If defrosting time is selected for 2 minutes 56 seconds, each operating period will be as follows: (See **Fig. 8**)
2 minutes 56 seconds = 176 seconds
176/8 = 22

Example 2: If defrosting time is selected for 5 minutes, each operating period will be as follows : (See **Fig. 9**)
5 minutes = 300 seconds
300/8 = 37 and remainder is 4 seconds.
The 4 seconds is added to the last time period.

NOTE: **When defrosting time is selected for not more than 7 seconds, the power relay C will not be energized at all.**

INDICATION	OUTPUT POWER AGAINST HIGH POWER	ON, OFF TIME ON POWER RELAY C
High	22/22 (700W)	
M. High	21/22 (650W)	
Med	17/22 (480W)	
M. Low	13/22 (360W)	
Low	8/22 (190W)	
Warm	4/22 (70W)	
Defrost	Approx 110W	Please refer to description of cyclic defrost.

Fig. 5

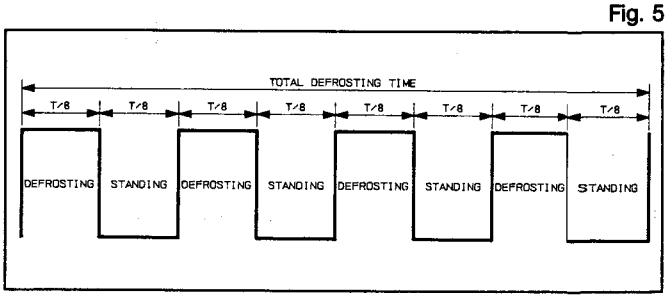


Fig. 6

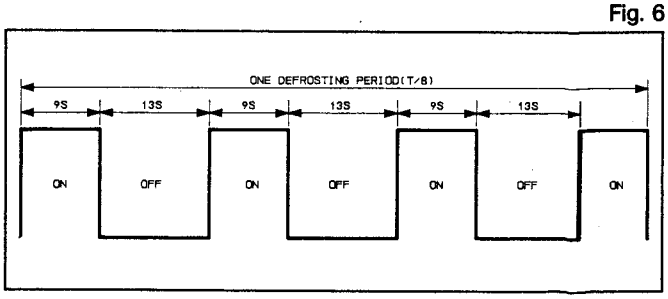


Fig. 7

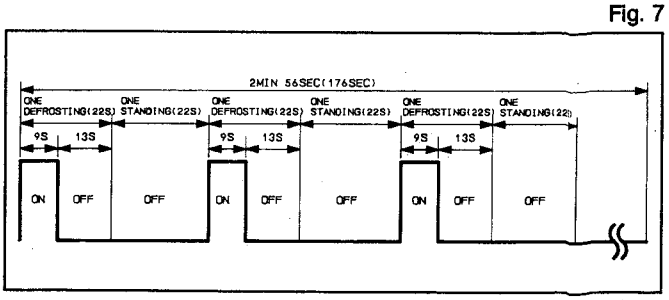


Fig. 8

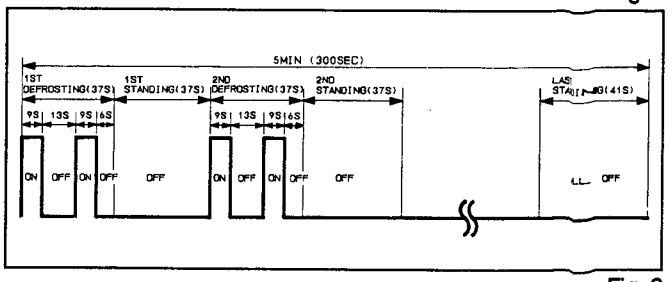


Fig. 9

3. Auto weight defrost control

Consists of the following pads:
- Auto Weight Control, Defrost Pad
- Weight Pads
- Start Pad

When the Auto Weight Control, Defrost feature is selected and the Start Pad is tapped:

(A) The digital programmer circuit determines the power levels and defrosting time to complete defrosting and indicates the operating state in the display window.
Fig. 10 shows the defrosting times for respective weights by categories.

(B) When defrosting time in the display window has elapsed, the oven turns off automatically by the controlled signal from the digital programmer circuit.

4. Auto weight frozen cook control

Consists of the following pads:
- Auto Weight Control, Frozen Cook Pad
- Weight Pads
- Start Pad

When the Auto Weight Control, Frozen Cook feature is selected and the Start Pad is tapped:

(A) The digital programmer circuit functions exactly the same as when Auto Weight Control, Defrost feature is selected, except for some variations in cooking powers and cooking times.
Fig. 11 shows the cooking times for respective weights by categories.

WEIGHT SELECTED	DISPLAY	TOTAL DEFROSTING TIME		
		CATEGORY 1	CATEGORY 2	CATEGORY 3
1 LB	1.0 lb	12 min. 30 sec.	11 min. 30 sec.	11 min. 30 sec.
2 LB	2.0 lb	25 min. 00 sec.	23 min. 00 sec.	23 min. 00 sec.
3 LB	3.0 lb	37 min. 30 sec.	34 min. 30 sec.	34 min. 30 sec.
4 LB	4.0 lb	50 min. 00 sec.	46 min. 00 sec.	—
5 LB	5.0 lb	1 hour 02 min.	57 min. 30 sec.	—
6 LB	6.0 lb	1 hour 15 min.	1 hour 09 min.	—
7 LB	7.0 lb	1 hour 27 min.	1 hour 20 min.	—
8 LB	8.0 lb	1 hour 40 min.	1 hour 41 min.	—
9 LB	9.0 lb	—	1 hour 47 min.	—
10 LB	10.0 lb	—	1 hour 53 min.	—
11 LB	11.0 lb	—	1 hour 59 min.	—
12 LB	12.0 lb	—	2 hour 05 min.	—
13 LB	13.0 lb	—	2 hour 11 min.	—
14 LB	14.0 lb	—	2 hour 17 min.	—
15 LB	15.0 lb	—	2 hour 23 min.	—
16 LB	16.0 lb	—	2 hour 29 min.	—

Fig. 10

WEIGHT SELECTED	DISPLAY	AUTO WEIGHT FROZEN COOKING TIME		
		CATEGORY 1	CATEGORY 3	CATEGORY 5
1 OZ	1 oz	48 sec.	1 min. 00 sec.	45 sec.
5 OZ	5 oz	4 min. 00 sec.	5 min. 00 sec.	3 min. 45 sec.
10 OZ	10 oz	8 min. 00 sec.	10 min. 00 sec.	7 min. 30 sec.
15 OZ	15 oz	12 min. 00 sec.	13 min. 30 sec.	11 min. 15 sec.
20 OZ	20 oz	16 min. 00 sec.	16 min. 30 sec.	15 min. 00 sec.
25 OZ	25 oz	20 min. 00 sec.	19 min. 30 sec.	18 min. 45 sec.
30 OZ	30 oz	24 min. 00 sec.	22 min. 30 sec.	21 min. 30 sec.
32 OZ	32 oz	25 min. 36 sec.	23 min. 42 sec.	24 min. 00 sec.
		CATEGORY 2	CATEGORY 4	
1 OZ	1 oz	51 sec.	42 sec.	
5 OZ	5 oz	4 min. 15 sec.	3 min. 30 sec.	
10 OZ	10 oz	8 min. 30 sec.	7 min. 00 sec.	
15 OZ	15 oz	12 min. 45 sec.	10 min. 30 sec.	
16 OZ	16 oz	13 min. 36 sec.	11 min. 12 sec.	

Fig. 11

5. Convection cooking control

The digital programmer circuit controls the ON-OFF time of the heater in order to control oven cavity temperature.

(A) After the start pad is tapped with the desired convection program set, an 18V DC signal comes out of the digital programmer circuit and is applied to coil of power relay B.

(B) When the contacts of power relay B close, power source voltage (120V AC) is applied to the heater and the heater turns on.

(C) When the oven temperature reaches the set temperature, the digital programmer circuit senses the temperature through oven temp sensor and stops supplying an 18V DC signal to the coil of power relay B and the heater turns off.

(D) After the heater turns off, the oven temperature will continue increasing a while and then decrease as shown in **Fig. 12**. When the oven temperature drops below the set temperature, the digital programmer circuit senses the signal and starts supplying an 18V DC signal to the coil of power relay again.

NOTE: When Broil cooking feature is selected, oven temperature is determined automatically by category as shown in **Fig. 13**.

6. Combination cooking control

Combination cooking is accomplished by microwave and convection cooking being done alternately during one combination cooking cycle. One combination cooking cycle is 22 seconds.

(A) During combination cooking, the digital programmer circuit controls ON-OFF time of both power relay B and C as shown in **Fig. 14**.

(B) When the power relay C is turned on, heater turns off and after the power relay C turns off, power relay B turns on.

NOTE 1: Note that the heater may not be on during a heater on period if the preprogrammed oven temperature has been reached. This is due to the fact that the oven is keeping the preprogrammed oven temperature constant, so of course the heater will only be on when it is needed and off when it is not needed. (See **Fig. 14**)

NOTE 2: As for temperatures of combination cooking for convection, the temperatures by each program are preprogrammed in the microprocessor as shown in **Fig. 15**.

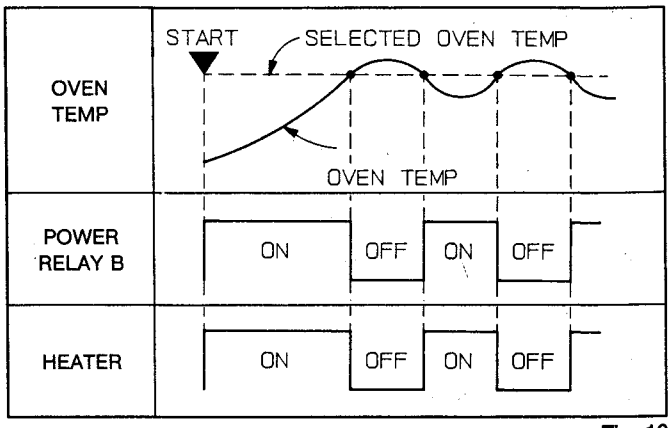


Fig. 12

CATEGORY	OVEN TEMP
1	475°F
2	450°F

Fig. 13

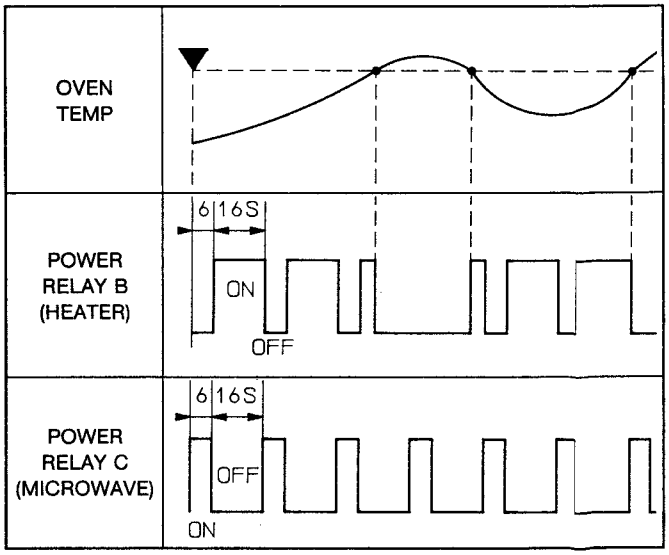


Fig. 14

CATEGORY	MICROWAVE POWER		OVEN TEMP
	DUTY	POWER	
1	6/22 SEC	160 W	250°F
2	6/22 SEC	160 W	275°F
3	6/22 SEC	160 W	325°F
4	6/22 SEC	160 W	375°F

Fig. 15

7. Auto weight combination cooking control

Consists of following pads:
- Auto Weight Control, Combination Pad
- Weight Pads
- Start Pad

When the Auto Weight Control, Combination Cooking feature is selected by tapping the appropriate key pads and Start pad is tapped.

(A) The digital programmer circuit determines the power level, oven temperature and combination cooking time to complete combination cooking and indicates the operating state in the display window.
Fig. 16 shows the combination cooking times for respective weights by categories.

(B) When the combination cooking time in the display window has elapsed, the oven turns off automatically by the controlled signal from the digital programmer circuit.

WEIGHT SELECTED	TOTAL COMBINATION COOKING TIME						
	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5	CATEGORY 6	CATEGORY 7
1 LB	18 min. 30 sec.	18 min. 30 sec.	27 min. 00 sec.	23 min. 00 sec.	26 min. 00 sec.	23 min. 00 sec.	19 min. 30 sec.
2 LB	37 min. 00 sec.	44 min. 00 sec.	54 min. 00 sec.	46 min. 00 sec.	52 min. 00 sec.	46 min. 00 sec.	39 min. 00 sec.
3 LB	55 min. 30 sec.	1 hour 06 min.	1 hour 21 min.	1 hour 09 min.	1 hour 18 min.	1 hour 09 min.	58 min. 30 sec.
4 LB	1 hour 14 min.	1 hour 28 min.	1 hour 48 min.	1 hour 32 min.	1 hour 44 min.	1 hour 32 min.	1 hour 14 min.
5 LB	1 hour 32 min.	1 hour 50 min.	2 hour 15 min.	1 hour 55 min.	2 hour 10 min.	1 hour 55 min.	1 hour 32 min.
6 LB	1 hour 51 min.	2 hour 12 min.	2 hour 42 min.	2 hour 18 min.	2 hour 36 min.	2 hour 18 min.	1 hour 51 min.
7 LB	2 hour 09 min.	2 hour 34 min.	3 hour 09 min.	—	—	—	2 hour 09 min.
8 LB	2 hour 28 min.	2 hour 56 min.	3 hour 36 min.	—	—	—	2 hour 08 min.
9 LB	—	—	—	—	—	—	2 hour 24 min.
10 LB	—	—	—	—	—	—	2 hour 40 min.
11 LB	—	—	—	—	—	—	2 hour 56 min.
12 LB	—	—	—	—	—	—	3 hour 12 min.
13 LB	—	—	—	—	—	—	3 hour 28 min.
14 LB	—	—	—	—	—	—	3 hour 44 min.
15 LB	—	—	—	—	—	—	4 hour 00 min.
16 LB	—	—	—	—	—	—	4 hour 16 min.

Fig. 16

AUTO SENSOR EXPLANATION, K FACTORS AND POWER LEVELS

1. Auto sensor cooking (NE-9970, NE-9970C only)

Auto sensor cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time.
All that is necessary is to select an Auto Sensor Program before starting to cook.

Understanding Auto Sensor Cooking

As a food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor Cooking, a carefully designed instrument, called the humidity sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

NOTE: Auto Sensor Cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using power select and time features. Please consult Variable Power Microwave Cookbook for procedures.

Explanation of the Auto Sensor Cooking process (See Fig. 17)

1) The shaded columns in **Fig. 17** indicate when the humidity sensor heater is on.
2) During the first 50 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 50 seconds is subtracted from the T1 time. In other words T1 time starts at the end of the 50 second period. (This 50 second period is needed for the sensor element to stabilize and balance itself to the humidity present before microwave activity starts.)
3) **T1 time**·····The total amount of time it takes the microwave oven to switch to T2 time after the 50 second period. During this time one of the Auto Sensor programs (A1-A8) will be shown in display.
4) **T2 time**·····When the steam escapes from the cooking container placed in the oven, the humidity sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.

Balance of cooking time (T2 time)

The balance of cooking time which is called T2 time, can be calculated by the following formula.

T2 time (in sec.) =T1 time × K factor

NOTE: When calculating T2 time, the last digit of T1 time in seconds is cut away. For instance, if the T1 time is 56 seconds, the T2 time will be:

T2 = 50 × K

Remember, the T1 time starts after the 50 second period. The coefficient K is programmed into the microprocessor memory and they are listed in the following tables along with the P1 and P2 powers. (See **Fig. 18**)

NOTE: When "More" or "Less" pad is selected, the K factor varies as shown in **Fig. 18** resulting in T2 time to be increased or decreased.

Some examples of calculating the T2 time

Example 1: If the T1 time is measured to be 2 minutes and 45 seconds after the 50 second period, and the Auto program selected is COOK A3:

T2 = T1 × K
= 2 min. and 45 sec. × 2.5
= 160 sec. × 2.5
= 400 sec.
= 6 min. and 40 sec.

Example 2: If the T1 time is measured to be 15 minutes and 30 seconds after the 50 second period, and the Auto program selected is COOK A7:

T2 = T1 × K
= 15 min. and 30 sec. × 0.4
= 930 sec. × 0.4
= 372 sec.
= 6 min. and 12 sec.

Example 3: If More pad is tapped with Example 2:

T2 = T1 × K
= 15 min. and 30 sec. × 0.5
= 930 sec. × 0.5
= 465 sec.
= 7 min. and 45 sec.

NOTE: If using a calculator please remember the calculator rounds off in decimal numbers, so the T2 time will come out slightly different than if seconds are changed back to minutes by regular long division. When using a calculator, simply maltiply the tenths by 60 to get the correct number of seconds.
For instance take the T2 time in seconds from Example 2 above. Using the calculator divide 60 into 372 and the quotient will be 6.2 Then multiply 0.2 by 60 and the product will be 12 seconds.

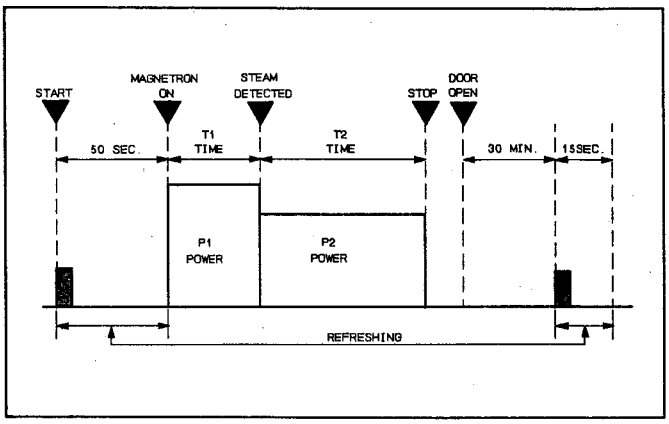


Fig. 17

AUTO SENSOR COOK					
	P1 Power	P2 Power	K factor		
			Standard	More	Less
A1	HIGH	—	0	0	0
A2	HIGH	M. LOW	0.3	approx. 0.4	approx. 0.2
A3	MED	M. LOW	2.5	approx. 3	approx. 2
A4	MED	MED	1.3-2	approx. 1.6-2.4	approx. 1-1.6
A5	MED	MED	1	approx. 1.2	approx. 0.8
A6	MED	MED	0.3	approx. 0.4	approx. 0.2
A7	MED	LOW	0.4	approx. 0.5	approx. 0.3
A8	MED	LOW	1-1.4	approx. 1.2-1.7	approx. 0.8-1.1

Fig. 18

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor

For about 30 seconds after the oven stops, an electric charge remains in the high voltage capacitor. When replacing or checking parts, short between oven chassis and the terminal of high voltage capacitor (terminal of lead wire from magnetron filament, high voltage transformer filament lead wire and diode lead wire) with an insulated screwdriver to discharge. (See **Fig. 19**)

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4. When the 15 Amp fuse is blown due to the operation of short switch:

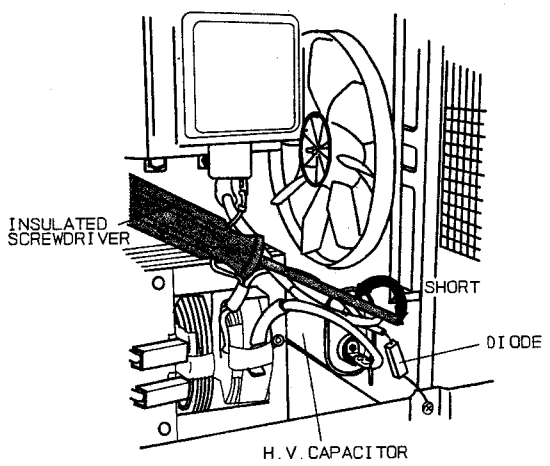
WARNING

When the 15 Amp. fuse is blown due to the operation of short switch, you must replace power relay C, latch switch A and short switch. For NE-9970C and NE-9870C, replace only latch switch A and short switch.

(A) This is mandatory. Refer to page 29 for the necessary adjustments for these switches.
(B) When replacing the fuse, confirm that it has the appropriate rating for these models.
(C) When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise, deficient in their ability to hold the switches.

5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.



Touch chassis side first then short to the high voltage capacitor terminal.

Fig. 19

6. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for microwave energy leakage, (Refer to procedure for measuring microwave energy leakage on page 30).

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Replacement of the magnetron

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

Removal of Positive Lock connector

The positive lock connector is a specially designed loose free connector and you will find this connector in many lead wire connections. To remove this connector, pull the lead wire by pressing an extruded lever in the center of receptacle terminal as shown in **Fig. 20.**

(A) Discharge the high voltage capacitor. (See page 23)
(B) Remove 2 screws holding thermal cutout.
(C) Remove 1 screw holding air guide A.
(D) Remove 2 high voltage leads from filament terminals.
(E) Remove 4 nuts holding the magnetron.

NOTE: To prevent microwave leakage, tighten mounting nuts properly making sure there is no gap between the waveguide and the magnetron.

CAUTION

When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire of high voltage transformer should be connected to "F terminal" and the lead wire from high voltage capacitor should be connected to "FA terminal". (See **Fig. 21**)

2. Replacement of the fan motor

(A) Remove the magnetron. (Although the fan motor can be replaced without removing the magnetron, it will give you better access to the motor).
(B) Disconnect 2 lead wires from the fan motor terminals.
(C) Using a knife or diagonals, cut off the 3 tiny clips from the fan blade, and remove the fan blade from the motor shaft.

NOTE: A new fan blade is furnished with each replacement fan motor.

(D) Remove 2 screws holding the fan motor.

3. Replacement of the digital programmer circuit (D.P.C.).

NOTE: Be sure to ground any static electric charge built up in your body, before handling the D.P.C..

(A) Unplug the 3-pin connector (CN5) from the D.P.C..
(NE-9970, NE-9970C only)
Caution when removing connector CN5
This connector is a special type which may be very hard to remove just by pulling directly outward. Instead it can be removed easily by simply grasping it by the ends and rocking it side to side while pulling. (See **Fig. 22**)
(B) Unplug 7-pin (CN2), 8-pin (CN3) and 5-pin (CN6) connectors from the D.P.C.. (**Fig. 22**)
(C) Disconnect all lead wires from the power relay A, B and C. (**Fig. 22**)
(D) Remove 2 screws holding the escutcheon base. (**Fig. 22**)
(E) Release CN4 connector's lid of the D.P.C. and pull off the flat cable of the membrane switch. (**Fig. 23**)
(F) Remove 2 screws holding the D.P.C.. (**Fig. 23**)
(G) When removing membrane switch, remove 7 screws holding escutcheon bracket and detach the escutcheon bracket from escutcheon base.

4. Replacement of the power relay D (on the mini PCB)

(A) Using solder wick or a desoldering tool, carefully remove all solder from the terminal pins of power relay D.

NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on the mini PCB contacts.

(B) With all the terminal pins cleaned and separated from the mini PCB contacts, remove the defective power relay and install new power relay making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.

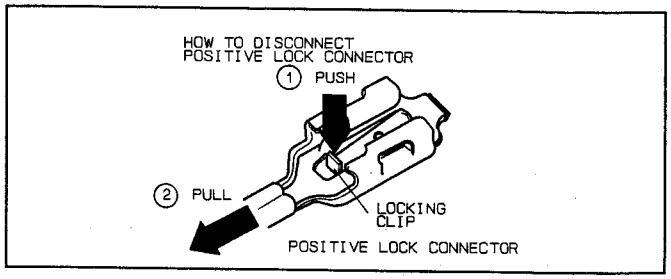


Fig. 20

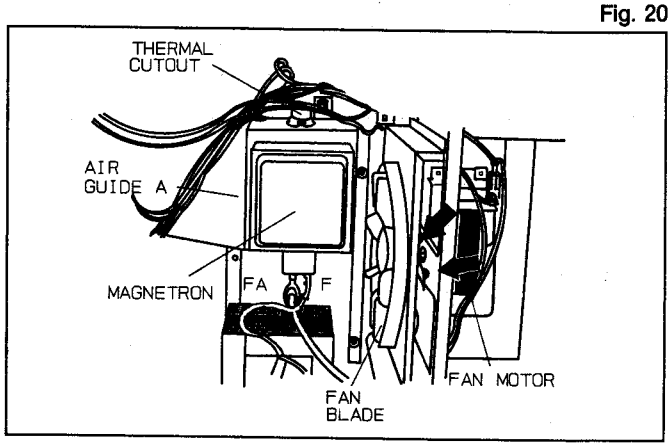


Fig. 21

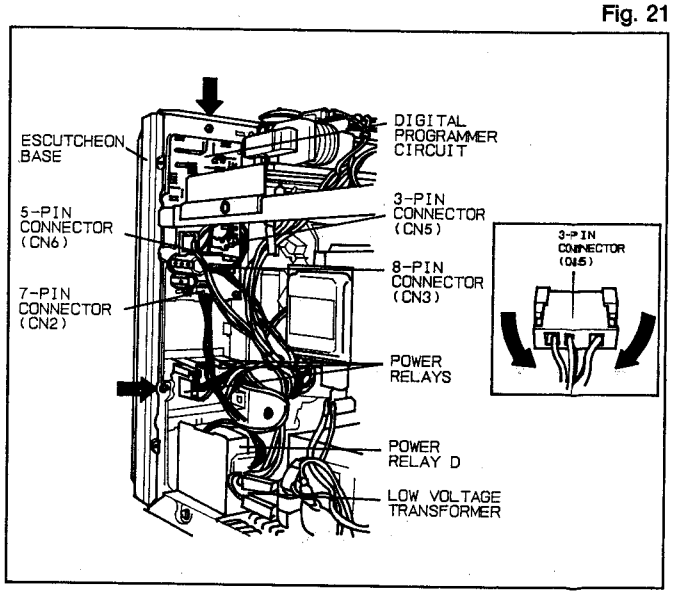


Fig. 22

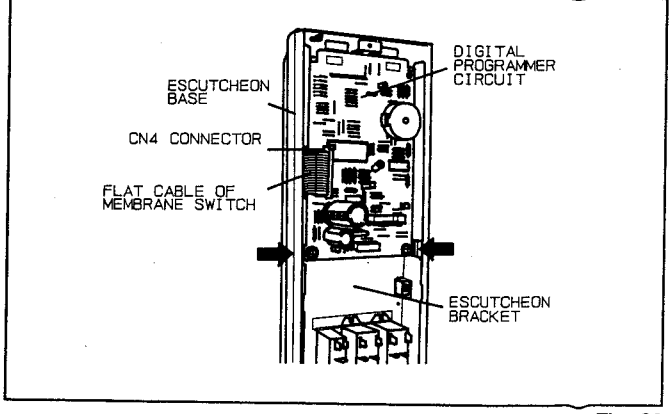


Fig. 23

5. Disassembly and replacement of the door assembly.

(A) Remove door arm spring from door arm.
(B) Remove door arm from door assembly.
(C) Remove 2 bolts holding the upper hinge to the oven.
(D) Open the door and while pulling the door toward you, work the upper hinge out through the hole in the oven.

NOTE: Do not lose spacer at the bottom hinge.

(E) Remove 4 screws holding the door C. (**Fig. 24**)
(F) Remove the door C by carefully pulling outward starting from the upper right hand corner.
(G) Remove door key spring and remove 3 screws holding door handle. (**Fig. 25**)
(H) Separate the door A from door E by carefully freeing the 8 catch hooks on door A while pulling outward. (See **Fig. 26** and **27**)
(I) Remove door keys, door key lever, door key spring and handle pins from the door E. (**Fig. 25**)
(J) When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment. (**Fig. 28**)
Also adjust so that the door has no play between the inner door surface and oven frame. If the door is not mounted properly, microwave may leak from the clearance between the door and the oven. (**Fig. 29**)

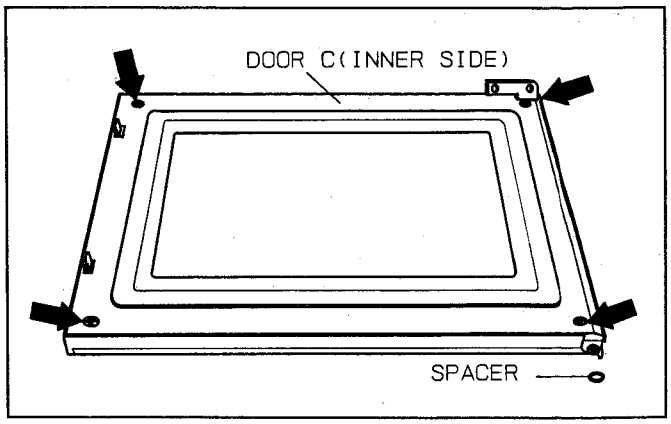


Fig. 24

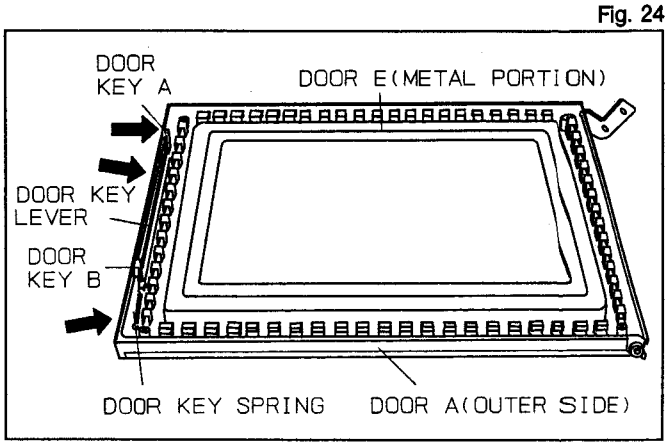


Fig. 25

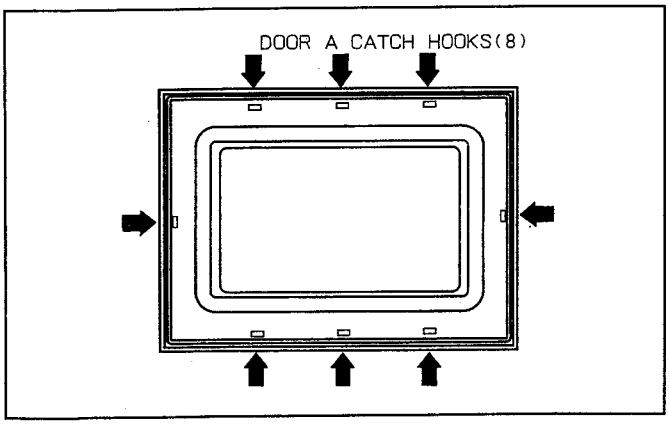


Fig. 26

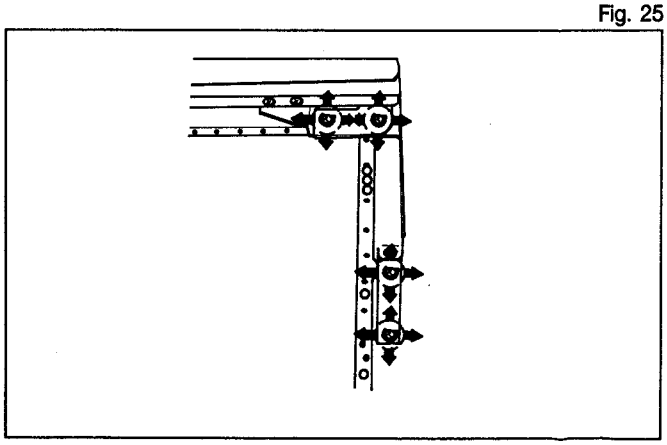


Fig. 28

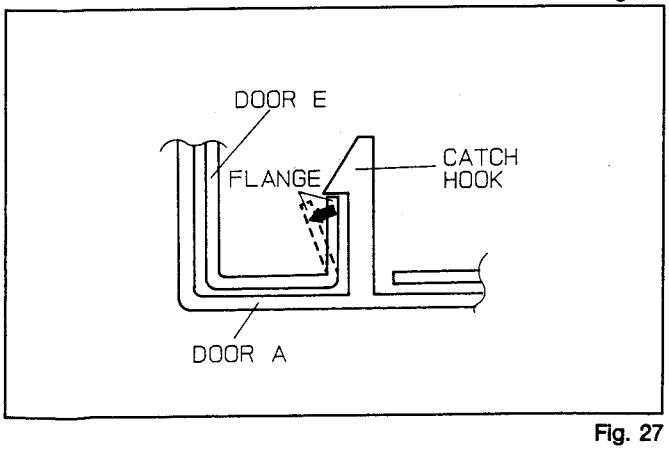


Fig. 27

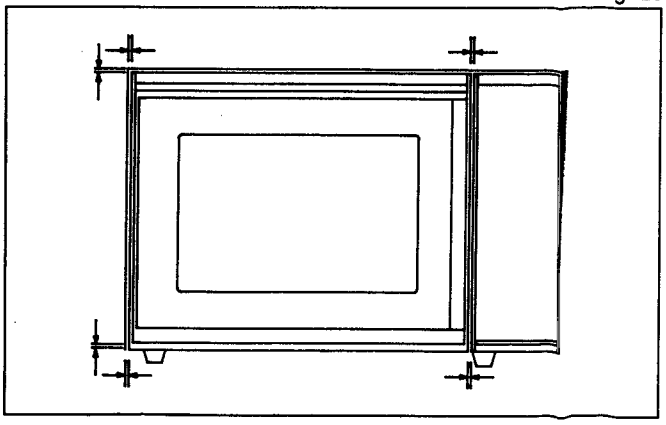


Fig. 29

6. Replacement of the heater

(A) Open the door and remove door arm spring from door arm.
(B) Release shielded wires and lead wires which are connected to oven temp sensor and humidity sensor respectively from the lead wire holders.
(C) Remove 2 screws holding exhaust guide and detach it from oven with himidity sensor installed.
(D) Remove 2 screws holding oven temp sensor.
(E) Remove belt.
(F) Remove 2 lead wire connectors from heater terminals.
(G) Remove 2 screws holding heater fan motor bracket. (oven side only)
NOTE: There are 3 screws holding heater fan motor bracket. The screws on outer frame side is not necessary to remove.
(H) Remove 2 screws holding air guide B.
(I) Remove 4 screws holding heater cover onto oven assy. (both sides only)
NOTE: Do not remove screws on top of heater cover.
(J) Remove heater cover assembly by lifting it up carefully with heater fan motor bracket slightly lifted up.
(K) Remove spring (speed) nuts from heater terminals. (**Fig. 31**)
(L) Remove 2 screws holding heater supports and detach the heater. (**Fig. 32**)

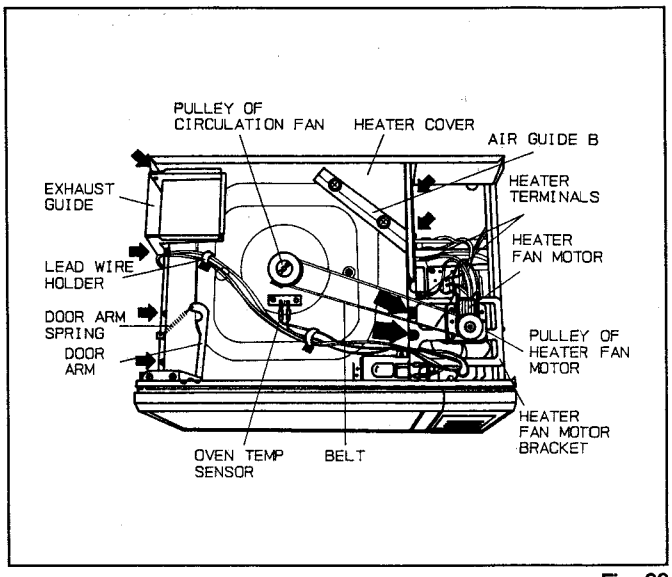


Fig. 30

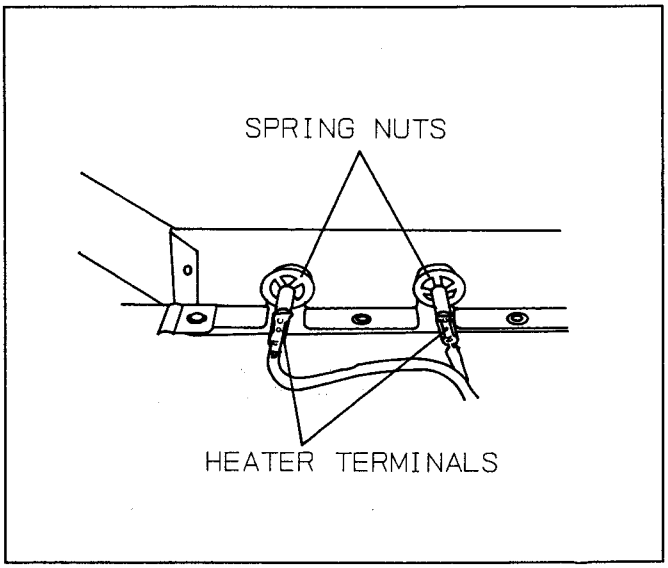


Fig. 31

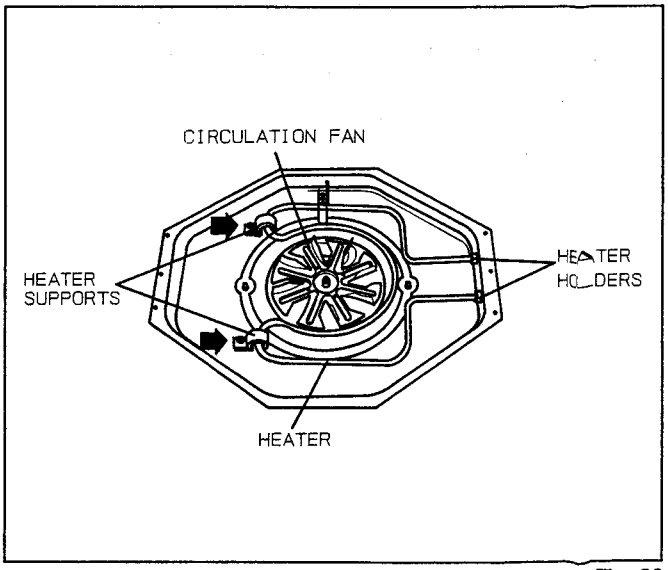


Fig. 32

COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the capacitor. (See page 23.)

1. High voltage transformer (See Fig. 33)

(A) Remove connections from the transformer terminals and check continuity.
(B) Normal (cold) resistance readings should be as follows:

Secondary winding	Approx. 70Ω~100Ω
Filament winding	Approx. 0Ω
Primary winding	Approx. 0Ω~ 1Ω

2. High voltage capacitor

(A) Check continuity of capacitor with meter on highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
(E) Resistance between each terminal and chassis should be infinite.

3. Diode

(A) Isolate the diode from the circuit by disconnecting the leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions.
A normal diode's resistance will be infinite in one direction and several hundred kΩ in the other direction.

4. Magnetron (See Fig. 34)

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.

5. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by pressing an appropriate pad on the key board.
The contacts assignment of the respective pads on the key board is as shown in **Fig. 35.**

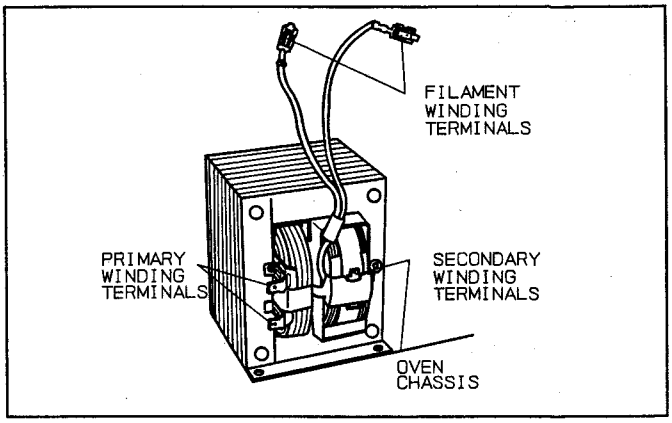


Fig. 33

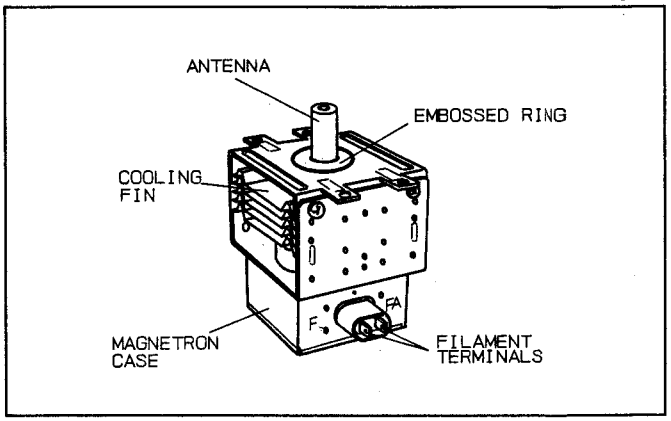


Fig. 34

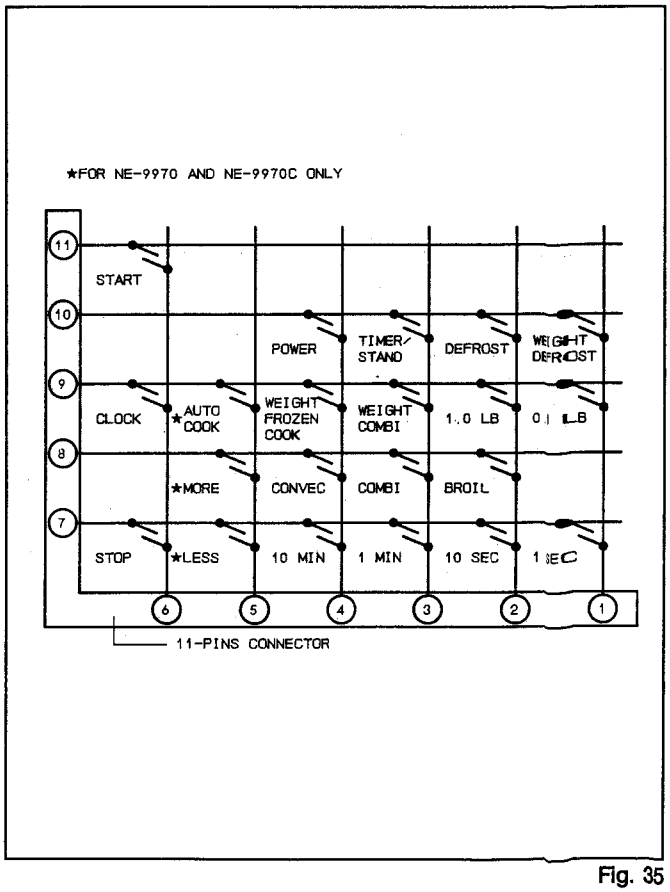


Fig. 35

6. Humidity sensor and digital programmer circuit (See Fig. 36)

CAUTION

Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
Always ground yourself while working on this panel to discharge any static charge built up in your body.

(A) Check across sensor heater terminals with 8-pin connector (CN3) unplagged. Normal cold resistance should read approx. 6 ohm.
(B) In order to determine if the Auto Sensor cooking function of the digital programmer circuit is in working order or not, do the following test.
1) Place a water load in the oven.
2) Unsolder 2 shielded wires connected to sensor terminals.
3) Tap Auto Sensor Cook Control Pad once to set Auto Sensor cooking at A1 and tap Start Pad
4) About 10 seconds after Start Pad is tapped, short shielded wires for 5 seconds and then remove them. Before shorting the shielded wires you can watch the sensor heater glow red.
5) The oven lamp will dim a little, about 50 seconds after the Start Pad is tapped. This indicates that magnetron has started oscillation.
6) 20 seconds after magnetron oscillation, short the shielded wires again. The oven should turn off automatically when the shielded wires are shorted.

The Auto Sensor cooking function in the digital programmer circuit is in working order if above condition is obtained.

7. Low voltage transformer

Check the voltage of secondary winding of the low voltage transformer (L.V.T.). The normal voltages of the L.V.T. with no load should read as shown in **Fig. 37-A** and **37-B**.
When measuring the voltage of L.V.T., measure the voltage between each pin of the L.V.T. with the connector (CN2) unplugged.

CAUTION

A 120V AC is present at the primary circuit of the low voltage transformer. When checking the secondary voltage of low voltage transformer, be cautious of possible shock hazard.

8. To test the oven temp sensor thermistor

This sensor monitors the heat produced by the heater circuit and maintains the oven temperature the user had selected normal room temperature, especially in a kitchen can vary anywhere from 50°F to 90°F. The reading across the oven sensor thermistor should be within 360K ohm to 800K ohm when read in an area within the 50°F to 90°F room temperature range.
If the resistance reading is out of the range stated here, the sensor is detective and must be replaced.

NOTE 1: When measuring resistance disconnect the 5-pin connector (CN6) from the DPC otherwise a false reading may be indicated.

NOTE 2: If checking an oven sensor thermistor just after the microwave oven has been operating, the sensor of course won't be room temperature. In this case the sensor must be removed and allowed to cool down to the 50°F to 90°F range.

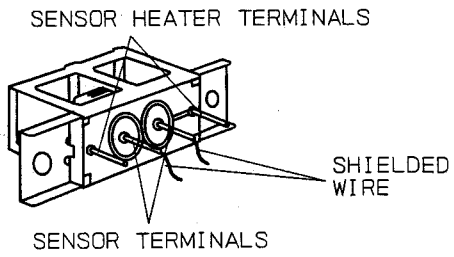


Fig. 36

For NE-9970, NE-9970C

PIN NO. OF L.V.T	SECONDARY VOLTAGE
S5 - S6	AC 2.74V ± 10%
S1/S3 - S4	AC 17.9V ± 10%
S1/S3 - S2	AC 17.0V ± 10%

Primary voltage·····AC 120V

Fig. 37-A

For NE-9870, NE-9870C

PIN NO. OF L.V.T	SECONDARY VOLTAGE
S3 - S4	AC 2.87V ± 10%
S1 - S2	AC 20.1V ± 10%

Primary voltage·····AC 120V

Fig. 37-B

MEASUREMENTS AND ADJUSTMENTS

WARNING

For continued protection against radiation hazard, replace only with identical replacement parts (Part No. ANE6142-F60, Type No. V-15G-3C26 for latch switch A and Part No. ANE6178-F80, Type No. V-15-2C25 for short switch).
When the 15 Amp. fuse is blown due to the operation of short switch, you must replace power relay C, latch switch A (power relay C is not needed for NE-9970C and NE-9870C) and short switch then follow the adjustment procedures below.
Interlock switch replacement — In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.

1. Adjustment of latch switch A

(A) Mount the latch switch A to the door hook A as shown in **Fig. 38**.
NOTE: **No specific adjustment during installation of latch switch A to the door hook A is necessary.**
(B) When mounting the door hook A assembly to the oven assembly, be sure to adjust the door hook A assembly by moving in the arrow direction so that the oven door will not have any play in it. **(Fig. 39)**
Check for play in the door by pulling on the door.
Make sure that the latch key positions correctly during adjustment. Also make sure that the latch key moves smoothly after adjustment is completed. Completely tighten the screws holding the door hook A assembly to the oven assembly.

2. Adjustment of latch switch B and short switch.

(A) Mount the latch switch B and the short switch to the door hook B as shown in **Fig. 40**.
NOTE: **No specific adjustment during installation of latch switch B and the short switch to the door hook B is necessary.**
(B) When mounting the door hook B assembly to the oven assembly, adjust the door hook B assembly by moving it in the direction of arrow in **Fig. 39** so that the oven door will not have any play in it.
Check for play in the door by pulling on the door.
Make sure that the latch key moves smoothly after adjustment is completed. Completely tighten the screws holding the door hook B assembly to the oven assembly.

3. Measurement of microwave output

The power output of the magnetron can be measured by performing a simple water temperature rise test.
Equipment needed for the Test:
*Two 1 liter beakers
*One glass thermometer
NOTE: **Check the line voltage under load. Low voltage will lower the magnetron output. Make all temperature and time tests with accurate equipment.**
(A) Fill the two 1 liter beakers with water and mark one A and one B.
(B) Stir the water in each beaker with the thermometer and record each beaker's temperature:
Beaker A's temperature = T1A
Beaker B's temperature = T1B
(C) The average value (T1) of T1A and T1B is calculated as follows:

$$T1 = \frac{T1A + T1B}{2}$$

(D) Place both beakers on the center of the glass cook plate.
Set the oven for High power and set two minutes. Heat the water for exactly two minutes.
(E) When heating is finished, stir the water again with the thermometer and measure the temperature rises as T2A and T2B.
(F) The average value (T2) of T2A and T2B is calculated as follows:

$$T2 = \frac{T2A + T2B}{2}$$

(G) Subtract T1 from T2. This will give you the temperature rise.
(H) The normal temperature rise for this model is 16° to 20°F (8.9° to 11°C) at the "High" power selection with the oven operating at the specified line voltage.
*If no temperature rise is noted, refer to the "TROUBLESHOOTING GUIDE".
NOTE: **In order to determine (not to measure the output power) if oven oscillates normally or not, you may conduct this test by heating one liter water for one minute. In this case, the temperature rise will be small due to microwave characteristics but should be over 13.5°F. (7.5°C.)**

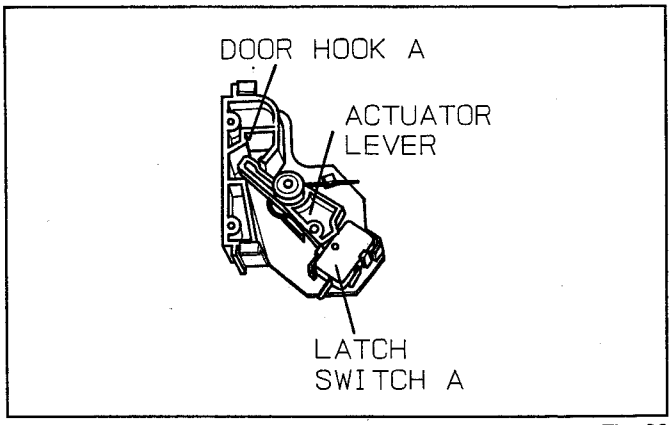
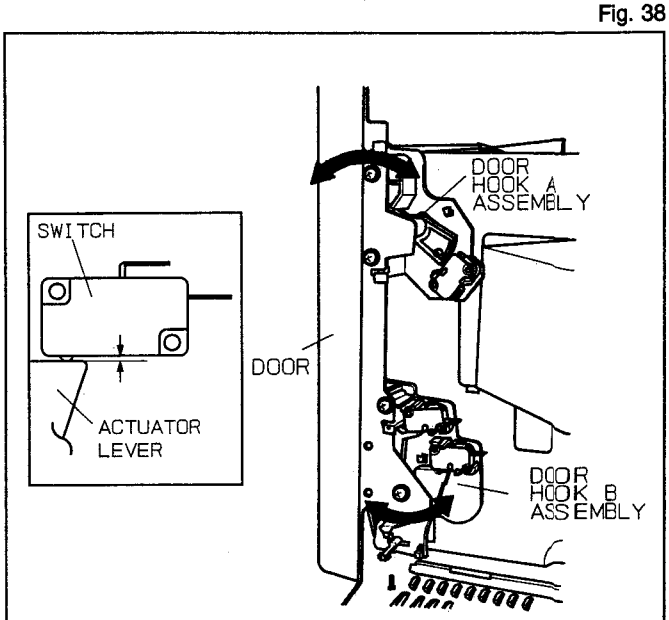


Fig. 38



Please confirm that the gap between the switch housing and switch actuator levers is no more than 1mm when the door is closed.

Fig. 39

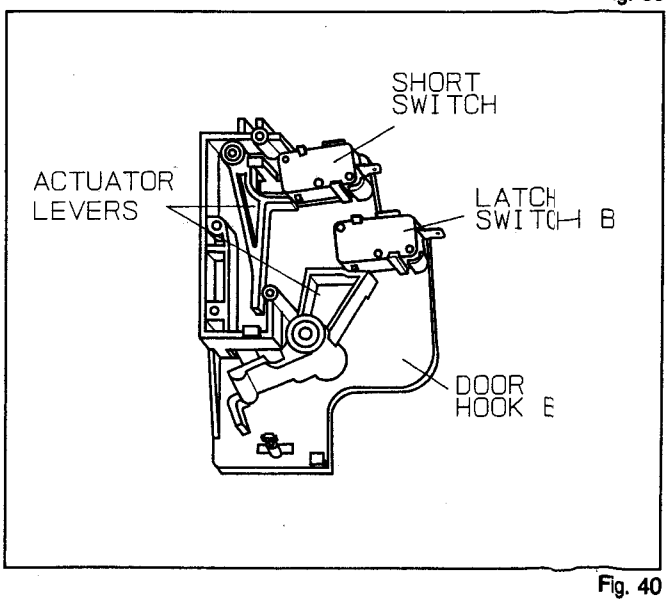


Fig. 40

PROCEDURE FOR MEASURING RADIATION LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mw/cm² (1mw/cm² for Canada) inform the Panasonic Co. (MESCO, PHI, PSC, or MELCA) immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S and NHW regulation. This required must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. government standard is 5 mw/cm² while in the customer's home. 2mw/cm² stated here is Panasonic's own voluntary standard. (1 mw/cm² for Canada)

1. Equipment

*Electromagnetic radiation monitor
*Glass thermometer 212°F or 100°C
*600cc glass beaker

2. Procedure for measuring radiation leakage.

Note before measuring

(1) Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.
(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area shown in ***Fig. 41*** *no faster than 1 inch/sec (2.5 cm/sec)*
(3) Leakage with the outer panel removed·····less than 5mw/cm²
(4) Leakage for a fully assembled oven with door normally closed··· ···less than 2mw/cm² (1mw/cm² for Canada)
(5) Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while lightly pressing the door release lever·····less than 2mw/cm²

(A) Pour 275 ± 15cc (9ozs ± 1/2oz) of 20 ± 5°C (68 ± 9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
(B) Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.
(C) When measuring the leakage, always use the 2 inch (5 cm) spacer supplied with the probe.
(D) Tap the start pad and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.
Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron. (**Fig. 42**)

WARNING

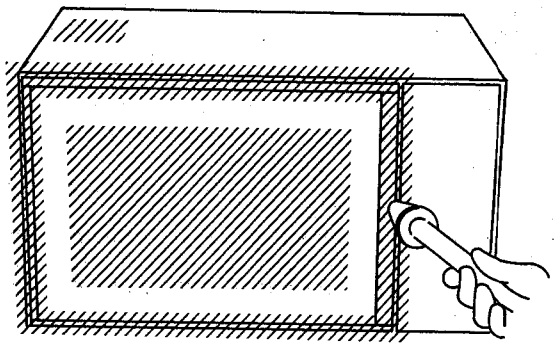
Avoid contacting any high voltage parts.

(2) Measurements with a fully assembled oven.
After all components, including the outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

3. Record keeping and notification after measurement

(A) After any adjustment or repair to a microwave oven a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.
(B) Should the radiation leakage be more than 2 mw/cm² (1mw/cm² for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify the PANASONIC CO. (MESCO, PHI, PSC or MELCA).

4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.



MOVE PROBE ALONG SHADED AREA (////) AROUND EXHAUST OPENINGS (as shown) AND AROUND AIR INLET OPENING

Fig. 41

WARNING

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.

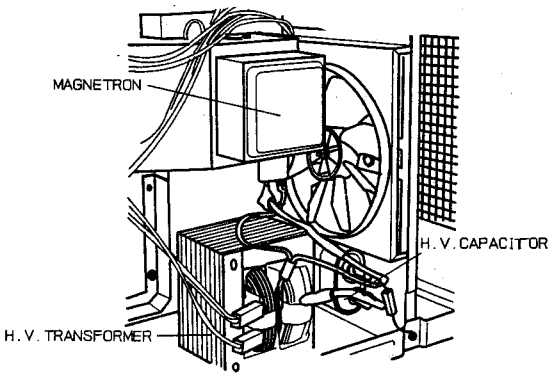


Fig. 42

TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge high voltage capacitor. (See page 23)
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
5. Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.

First of all operate the microwave oven following the correct operating procedures described on pages 4 ~ 13 in order to find the exact cause of any trouble.

[TROUBLE 1] The following visual conditions indicate a probable defective digital programmer circuit (D.P.C.) or membrane key board (membrane switch assembly).

A. In case of following conditions, D.P.C. is defective.

1. Incomplete segments.
   (A) Segments missing.
   (B) Partial segments missing.
   (C) Digit flickering other than normal fluorescent slight flickering.
   (D) Colon does not turn on or does not blink when the clock pad is tapped.
2. A distinct change in the brightness of one or more numbers in the display.
3. One or more digits in the display not on when they should be.
4. Wrong or no power indicator light for power level selected.
5. Specific numbers (for example 2 or 3) will not display.
6. Display does not count down with time cooking or when using display as a timer.
7. Display does not count up with clock operation.
8. Oven is programmable and cooks normally but no display shows.
9. Display obviously jumps in time while counting down or up.
10. Display counts down noticeably too fast while cooking.
11. Display cannot shift from the first stage cooking to the second stage cooking even though Two Stage Cooking is programmed.
12. Display does not stop counting down with time cooking even when Stop/Reset Pad is tapped.
13. Time of day does not reappear when cooking is finished.

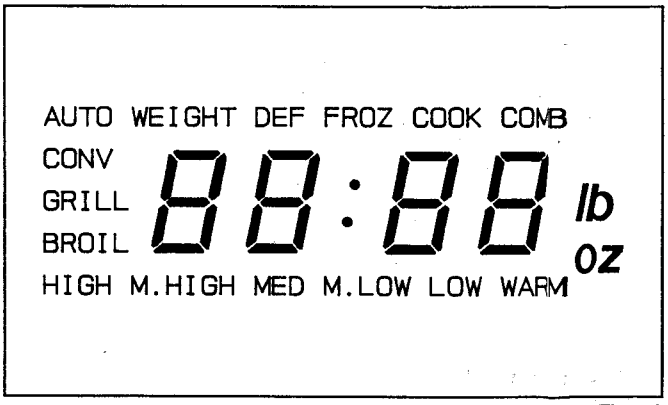


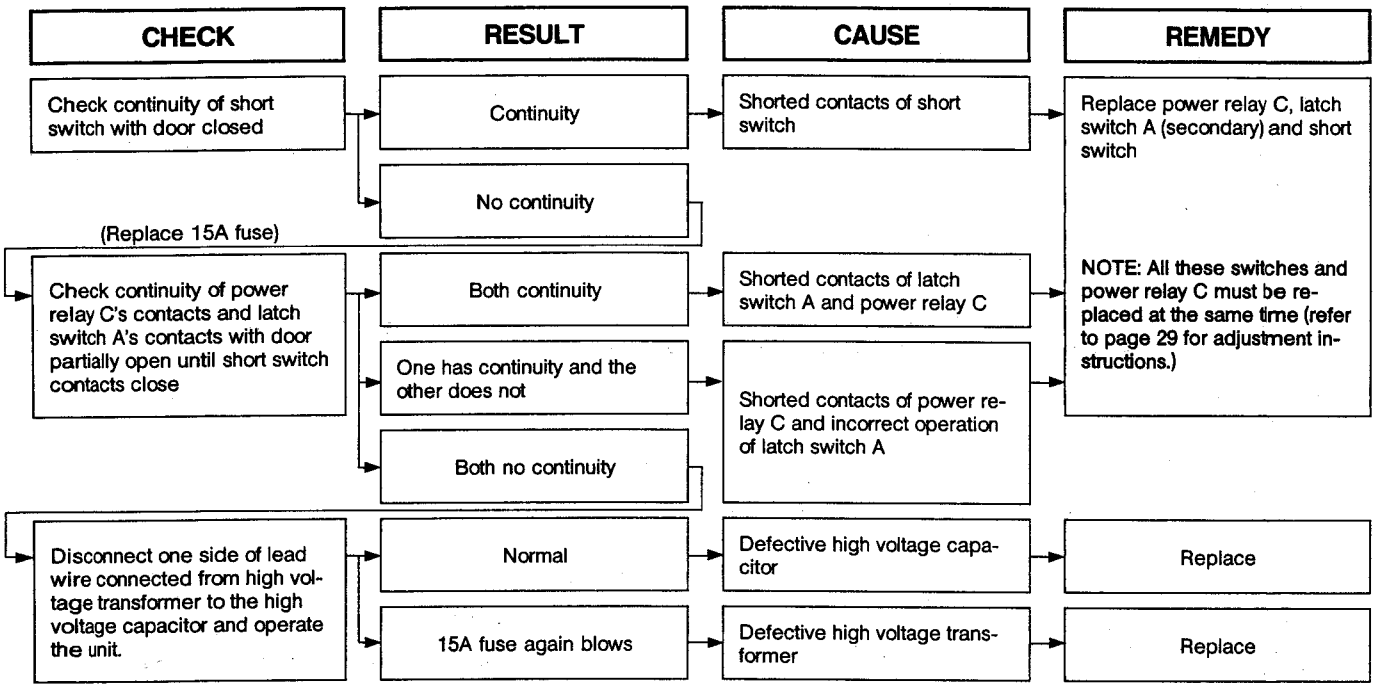
Fig. 43

B. In case of following conditions, either D.P.C. or membrane switch is defective.

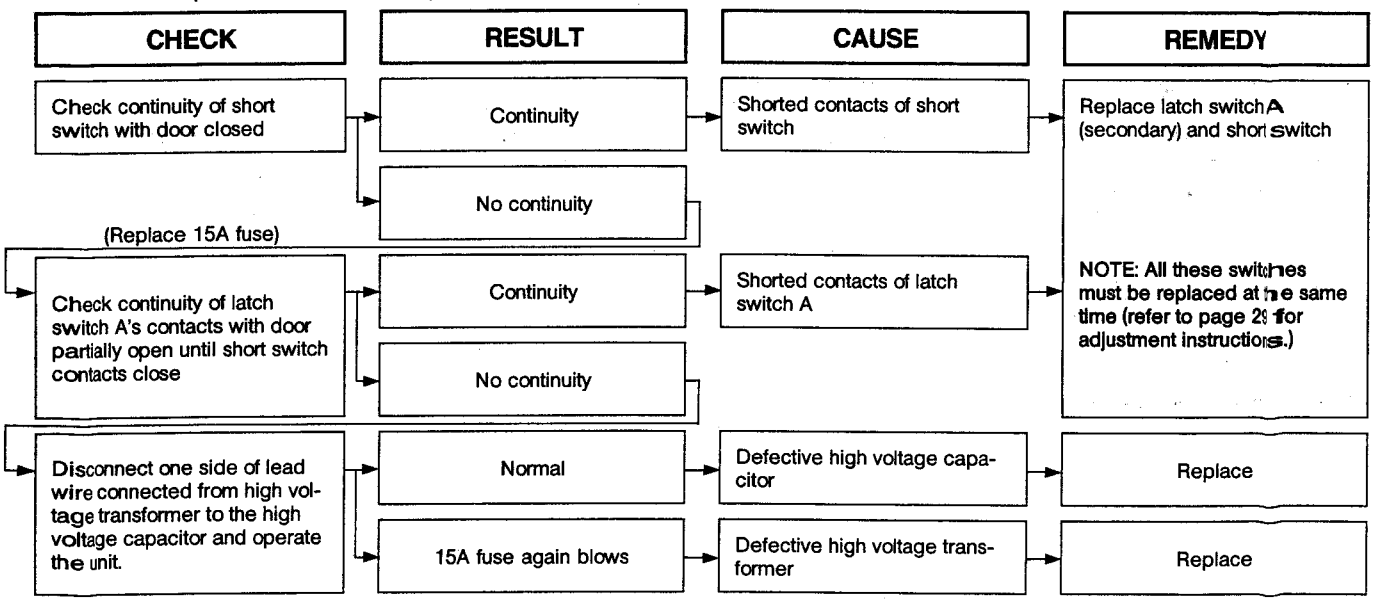
CHECK	RESULT	CAUSE	REMEDY
1. Clock set cannot be programmed at all.			
Check continuity of membrane switch (between terminals 6 and 9) with clock pad tapped	No continuity	Defective membrane switch	Replace
	Continuity	Defective DPC	Replace
2. Some inputs cannot be programmed.			
Check continuity of membrane switch (refer to page 27 for the test procedures of membrane switch)	Some pads have no continuity	Defective membrane switch	Replace
	Normal	Defective DPC	Replace
3. Display indicates a number or figure different from one touched. Random programming when pressing other than touch pads or without pressing any at all. (Intermittently)			
Replace membrane switch and recheck	Everything works as specified	Defective membrane switch	Replace
	Still have trouble	Defective DPC	Replace

[TROUBLE 2] Oven does not operate at all; Display window does not display any figures and no key in of any pads will be accepted.

1. 15A fuse blows (For NE-9970, NE-9870)


CHECK
RESULT
CAUSE
REMEDY
Check continuity of short switch with door closed
Continuity
Shorted contacts of short switch
Replace power relay C, latch switch A (secondary) and short switch
No continuity
(Replace 15A fuse)
Check continuity of power relay C's contacts and latch switch A's contacts with door partially open until short switch contacts close
Both continuity
Shorted contacts of latch switch A and power relay C
NOTE: All these switches and power relay C must be replaced at the same time (refer to page 29 for adjustment instructions.)
One has continuity and the other does not
Shorted contacts of power relay C and incorrect operation of latch switch A
Both no continuity
Disconnect one side of lead wire connected from high voltage transformer to the high voltage capacitor and operate the unit.
Normal
Defective high voltage capacitor
Replace
15A fuse again blows
Defective high voltage transformer
Replace

1". 15A fuse blows (For NE-9970C, NE-9870C)


CHECK
RESULT
CAUSE
REMEDY
Check continuity of short switch with door closed
Continuity
Shorted contacts of short switch
Replace latch switch A (secondary) and short switch
No continuity
(Replace 15A fuse)
Check continuity of latch switch A's contacts with door partially open until short switch contacts close
Continuity
Shorted contacts of latch switch A
NOTE: All these switches must be replaced at the same time (refer to page 29 for adjustment instructions.)
No continuity
Disconnect one side of lead wire connected from high voltage transformer to the high voltage capacitor and operate the unit.
Normal
Defective high voltage capacitor
Replace
15A fuse again blows
Defective high voltage transformer
Replace

2. Outlet has proper voltage. Fuse is not open.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of thermal cutout	No continuity	Defective thermal cutout	Replace
Check continuity of power supply cord	No continuity	Open power supply cord	Replace
Disconnect 5-pin connector (CN1) and check continuity of low voltage transformer (Check between pin no. 1 and 5)	Infinity	Open winding of low voltage transformer	Replace
	Approx. 45Ω (Normal)	Defective DPC	Replace

[TROUBLE 3] Display shows all figures selected, but oven does not start cooking even though desired program and time are set and start pad is tapped.
(Cooking time counts down and oven lamp turns on.)

CHECK	RESULT	CAUSE	REMEDY
Check continuity of latch switch A	No continuity	Faulty of latch switch B	Replace
		Loose connection of latch switch A's wiring	Repair
	Continuity	Improper adjustment of latch mechanism (latch switch A)	Adjust

[TROUBLE 4] No microwave oscillation even though fan motor and turntable rotate.

CHECK	RESULT	CAUSE	REMEDY
Check DC voltage being supplied to power relay C coil (NOTE 1)	0V	Defective digital programmer circuit	Replace
	Normal	Faulty contacts of power relay C or open relay coil	Replace
		Open lead wire (Ref. No. W3) (Refer to figure WIRING MATERIAL on page 44) (NOTE 2)	Replace lead wire (Ref No. W3) and also magnetron
		Open winding of high voltage transformer or faulty insulation of filament winding (NOTE 3)	Replace
		Shorted diode (NOTE 3)	Replace
		Faulty magnetron (NOTE 3)	Replace

NOTE 1: Disconnect two lead wires connected to the power relay C coil.
Set power at High and set any time.
Normal digital programmer circuit should read approx. 18V DC continuously.

NOTE 2: Unlike previous models, no protector is provided on lead wire W3.
When magnetron filament is short-circuited, this W3 lead wire will be burnt and act as a protector.
When this lead wire is open, replace together with magnetron.

NOTE 3: Refer to component test procedure on page 27.

[TROUBLE 5] Microwave output power is low. First of all, check if output is really low by following "Measurement of microwave output" on page 29.

CHECK	RESULT	CAUSE	REMEDY
Check the power source voltage with magnetron oscillating.	Lower than 105 volts	Decrease in power source voltage	Customer education
	Normal		
Check the timing periods of the 18V DC being applied to the power relay C coil (refer to page 18 for the timing periods of the power relay C)	Abnormal	Defective digital programmer circuit	Replace
	Normal	Aging change of magnetron	Replace depending on the result of output test

[TROUBLE 6] Magnetron oscillates for 1~5 minutes after start pad is tapped, then stops all functions of the oven. (oven lamp, fan motor and turntable motor do not turn on.)

REASON: During first 1~5 minutes, magnetron is oscillates but the fan motor does not rotate, this causing the magnetron to heat up and open the magnetron thermal cutout.

WARNING

A high voltage is generated in the secondary winding of the high voltage transformer and also high voltage circuit, even though fan motor does not rotate. Be very cautious for high voltage when troubleshooting.

CHECK	RESULT	CAUSE	REMEDY
Check DC voltage being applied to power relay D coil (NOTE 4)	Approx. 18V DC	Faulty contacts of power relay D or open relay coil	Replace power relay D (on the mini PCB)
	0V	Defective DPC	Replace

NOTE 4: When checking DC voltage, check between coil terminals of power relay D with door opened.

[TROUBLE 7] Magnetron oscillates for 1~5 minutes after power supply cord is plugged into wall receptacle, then stops all functions of the oven. Then about 7~15 minutes later, magnetron oscillates again.

REASON: During first 1~5 minutes, magnetron is oscillates but the fan motor does not rotate, this causing the magnetron to heat up and open the magnetron thermal cutout.

WARNING

A high voltage is generated in the secondary winding of the high voltage transformer and also high voltage circuit, even though fan motor does not rotate. Be very cautious for high voltage when troubleshooting.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of power relay C contacts	Continuity	Shorted contacts of power relay C	Replace
	No continuity	Defective DPC	Replace

[TROUBLE 8] Oven lamp, fan motor and turntable motor turn on when door is opened. (NE-9970, NE-9870 only)

CHECK	RESULT	CAUSE	REMEDY
Check continuity of latch switch A with door opened	Continuity	Shorted contacts of latch switch A	Replace

[TROUBLE 9] Microwave cooking program works normally, but convection cooking program does not.

1. Heater does not heat at all.

CHECK	RESULT	CAUSE	REMEDY
Disconnect 2 lead wires from heater terminals and check continuity of the heater	No continuity	Open heater	Repair
	Approx. 10Ω (Normal)		
Check DC voltage being applied to power relay B coil	Approx. 18V DC	Faulty contacts of power relay B or open relay coil	Replace
	0V	Defective D.P.C.	Replace

[TROUBLE 10] Heater turns on when microwave cooking. In this case, this trouble should be causing fuse and/or home circuit breaker to open.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of power relay B (Check between terminals 1-2 and 3-4)	Continuity	Faulty power relay B	Replace
	No continuity	Defective DPC	Replace

[TROUBLE 11] Combination cooking is not working in correct order

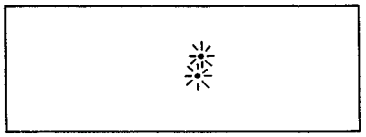
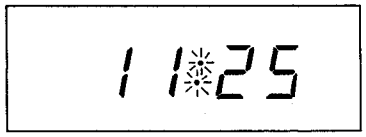
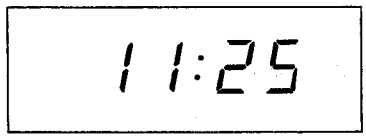
CHECK	RESULT	CAUSE	REMEDY
Check timing period of DC voltage being applied to power relay B and C (Refer to the description of combination cooking on page 20)	Abnormal	Defective DPC	Replace

[TROUBLE 12] "FF FF" appears in display window when convection or combination cooking.

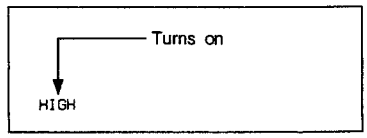
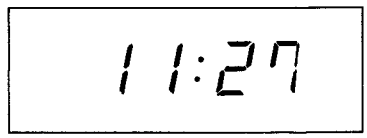
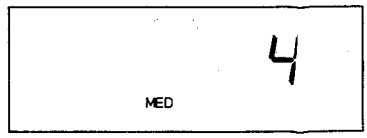
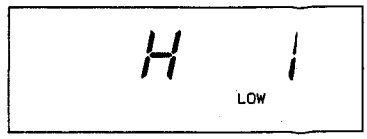
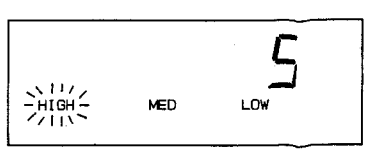
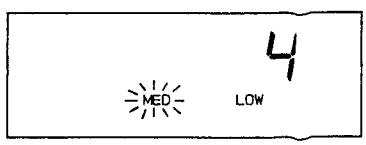
CHECK	RESULT	CAUSE	REMEDY
Check continuity of oven temp sensor with CN6 connector unplugged.	0Ω or infinity	Short or open oven temp sensor	Replace
	Normal	Defective DPC	Replace

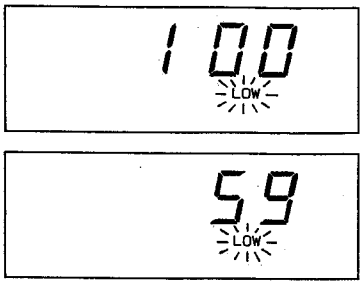
DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

1. To Set Clock

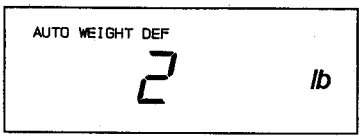
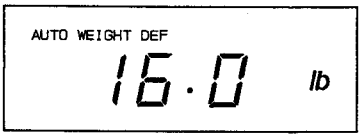
STEP	OPERATION	FUNCTION	DISPLAY
1	Plug the power supply cable into wall receptacle.	• Colon starts blinking.	
2	Enter time of day (TOD) by tapping appropriate number pads. Example : To Set 11 : 25 • Tap 10 min pad once • Tap 1 min pad once • Tap 10 sec pad twice • Tap 1 sec pad 5 times	• Numbers tapped are displayed in the display window. • Colon keeps blinking.	
3	Tap Clock Pad.	• Colon stops blinking and stays on. • TOD has now been registered into the digital programmer circuit and will count up by minutes.	

2. Time Cooking/Three Stage Cooking

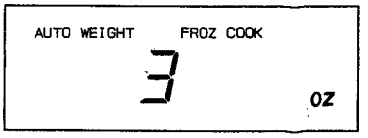
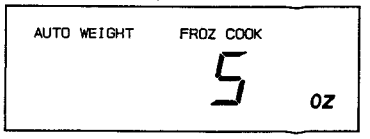
STEP	OPERATION	FUNCTION	DISPLAY
1	Place a water load in the oven.		
2	Tap Power Pad.(Example : Tap power select pad once for high power setting.)	• Clock time disappears. • HIGH power indicator light turns on.	
3	Tap Stop/Reset Pad.	• The display window will show TOD again.	
4	Select HIGH power and set for 5 seconds by tapping the appropriate pads. (1st stage)	• Clock time disappears. • HIGH Power indicator light turns on. • Display window shows "5".	
5	Set MED power for 4 seconds. (2nd stage)	• First stage cooking time "5" and HIGH power indicator light disappear. • Oven beeps twice. • MED power indicator light turns on. • Display window shows "4".	
6	Set LOW power for 1 minute. (3rd stage) Tap Power Select Pad 5 times and [1] second pad once.	• Second stage cooking time "4" and MED power indicator light disappear. • Oven beeps twice. • LOW power indicator light turns on. • Display window shows "H 1". **NOTE: When LOW power is selected, H meaning Hour appears in display window and cooking time is shown in hours and minutes.**	
7	Tap Start Pad. (1st stage)	• Oven light turns on. • Microwave activity starts. • Third stage cooking time disappears. • LOW power indicator light stays on. • HIGH and MED power indicator lights turn on. • Turntable begins to rotate. • First stage cooking time "5" appears and counts down by seconds. • HIGH (1st stage) power indicator light begins to blink.	
8	(2nd stage)	• After completing 1st stage program, oven automatically switches to 2nd stage. • HIGH (1st stage) power indicator light turns off. • MED (2nd stage) power indicator light starts to blink. • LOW (3rd stage) power indicator light remains on. • Display window indicates "4" and starts counting down by seconds.	

STEP	OPERATION	FUNCTION	DISPLAY
9	(3rd stage)	• After completing 2nd stage program, oven automatically switches to 3rd stage. • MED (2nd stage) power indicator light turns off. • LOW (3rd stage) power indicator light starts to blink. • Display indicates "1 00" and starts counting down by seconds.	
10	When third stage cooking ends, oven beeps five times and shuts off automatically.		• TOD appears in display window.

3. Auto Weight Defrost

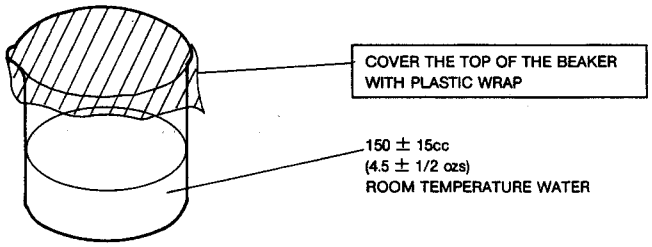
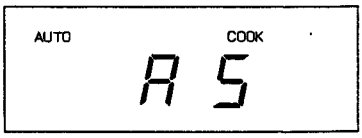
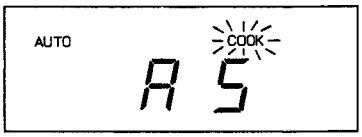
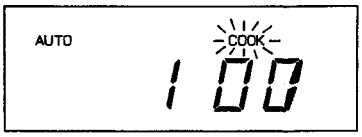
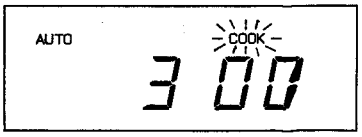
STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Control, Defrost Pad twice to select Defrost Category 2.	• Clock time disappears. • Category number "2" appears in the display window. • Auto Weight Defrost indicator lights turn on. • "lb" appears in the display window.	
2	Set the weight for 16 pounds by tapping 1.0 (lb) pad 16 times.	• Category number "2" disappears and the weight selected "16.0" appears in the display window.	
3	Tap Start Pad.	• Oven light turns on. • Microwave defrosting begins. • Auto Weight Defrost indicator light begins to blink. • Turntable begins to rotate. • Weight in display window disappears. • Defrosting time "2H 29" appears and counts down.	
4	Tap Stop/Reset Pad twice.	• Oven shuts off. • The display window will show TOD again.	

4. Auto Weight Frozen Cook

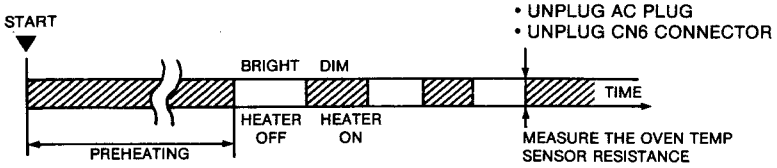
STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Control, Frozen Cook pad 3 times.	• Clock time disappears. • Category number "3" appears in the display window. • Auto Weight Frozen Cook indicator lights turn on. • "oz" appears in the display window.	
2	Set the weight for "5 ounces" by tapping 0.1(lb)/1(oz) pad 5 times.	• Category number "3" disappears. • Selected weight "5" appears in the display window.	
3	Tap Start pad.	• Oven lamp turns on. • Microwave cooking begins. • Turntable begins to rotate. • Auto Weight Frozen Cook indicator lights begin to blink. • Cooking time "5 00" appears and counts down.	
4	Tap Stop/Reset pad twice.	• Oven shuts off. • The display window will show TOD.	

5. Auto Sensor Cooking

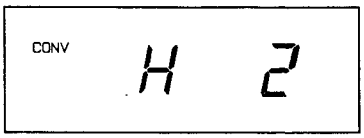
NOTE: Make sure that the outer panel is installed before Auto Sensor Cooking Test, since Auto Sensor function does not operate properly without the outer panel.

STEP	OPERATION	FUNCTION	DISPLAY
1	Pour 150 ± 15cc (4.5 ± 1/2 ozs) of room temperature water in a beaker, securely cover the top of the beaker with plastic wrap and place the beaker in the center of the oven.		
2	Tap Auto Sensor Control, Cook Pad 5 times.	• Clock time disappears. • "A5" appears in display window. • Auto Sensor Cook indicator lights turn on.	
3	Tap Start Pad.	• Auto Sensor Cook indicator light starts to blink. • Oven lamp turns on. • Fan motor and turntable start rotating. • Oven lamp will dim a little, about 50 seconds after Start Pad is tapped. This indicates that magnetron has started oscillation.	
	The humidity sensor detects steam about 2 to 4 minutes after the Start Pad is tapped. Auto Sensor Cooking (T1) automatically switches to time cooking (T2). "A5" disappeares with beep sounds and the remainder of cooking time appears in display window. **NOTE: Cooking time will vary depending on the water temperature, the shape of beaker or the power source voltage.**	• Auto Sensor Cooking automatically switches to time cooking. • "A5" disappears, two beeps sound, and 1 00 to 3 00 (1 minute to 3 minutes) appears in the display window as balance of cooking time.	 
		• When the balance of cooking time has elapsed, oven stops and beeps five times. • Auto Sensor Cook indicator light and oven lamp turn off. • TOD reappears in the display window. • Finally check to make sure if TOD is correct.	

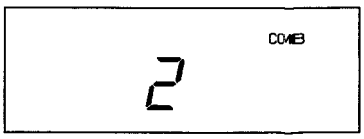
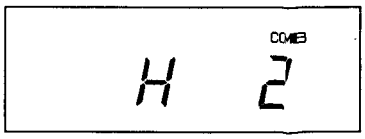
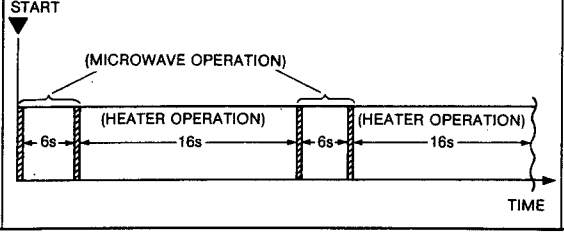
6. Convection Cooking (Preheating)

STEP	OPERATION	FUNCTION	DISPLAY
1	Be sure to place only the white glass ceramic tray in the oven.		
2	Tap Convection Pad twice.	• Clock time disappears. • Convection cooking indicator light turns on. • "22 5F" appears in the display window.	CONV 225F
3	Tap Start pad.	• "P" (meaning preheating) appears in the display window. • Convection cooking indicator light begins to blink. • Oven lamp turns on. • Tnrntable begins to rotate.	CONV P
		• When preheating is completed, oven beeps three times. • "P" begins to blink. • Oven lamp stays on and turntable continues to rotate. • After preheating is completed, oven lamp should intermittently become a little bright and dim. Wait for a couple of bright and dim cycles. This indicates that heater turns on and off to keep a constant oven temp.	CONV P
4	As soon as oven lamp dims unplug the AC power plug and CN6 connector from DPC. Measure the oven sensor resistance with ohmmeter as soon as possible. It should read (approx) 70 — 100 kohm.  CAUTION: TO PREVENT BURNS KEEP YOUR BODY, HANDS AND FINGERS AWAY FROM THE OVEN. THE OVEN GETS VERY HOT BOTH DURING AND AFTER HEATER OPERATION. NOTE: The programmed temperature of 225°F, will be read around the center of the oven, the temp read at the area of the oven sensor can be up to 50°F higher. NOTE: If door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.	

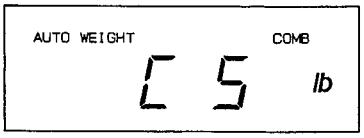
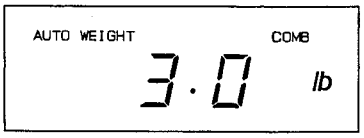
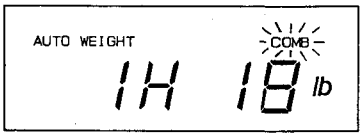
7. Convection Cooking (Time cooking)

STEP	OPERATION	FUNCTION	DISPLAY
1	After completion of preheating, be sure to open the door.	• When door is opened, turntable stops rotating. • "P" and "CONV" stop blinking and stay on.	
2	Close the door and set Convection cooking time for 2 min	• "P" disappears and Convection cooking time "H 2" appears in the display window.	
3	Tap Start pad.	• Oven lamp turns on. • Turntable begins to rotate. • Convection cooking begins. • Convection cooking indicator light begins to blink. • Convection cooking time counts down.	
		• When convection cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Convection cooking indicator light turns off. • T.O.D. appears in the display window.	

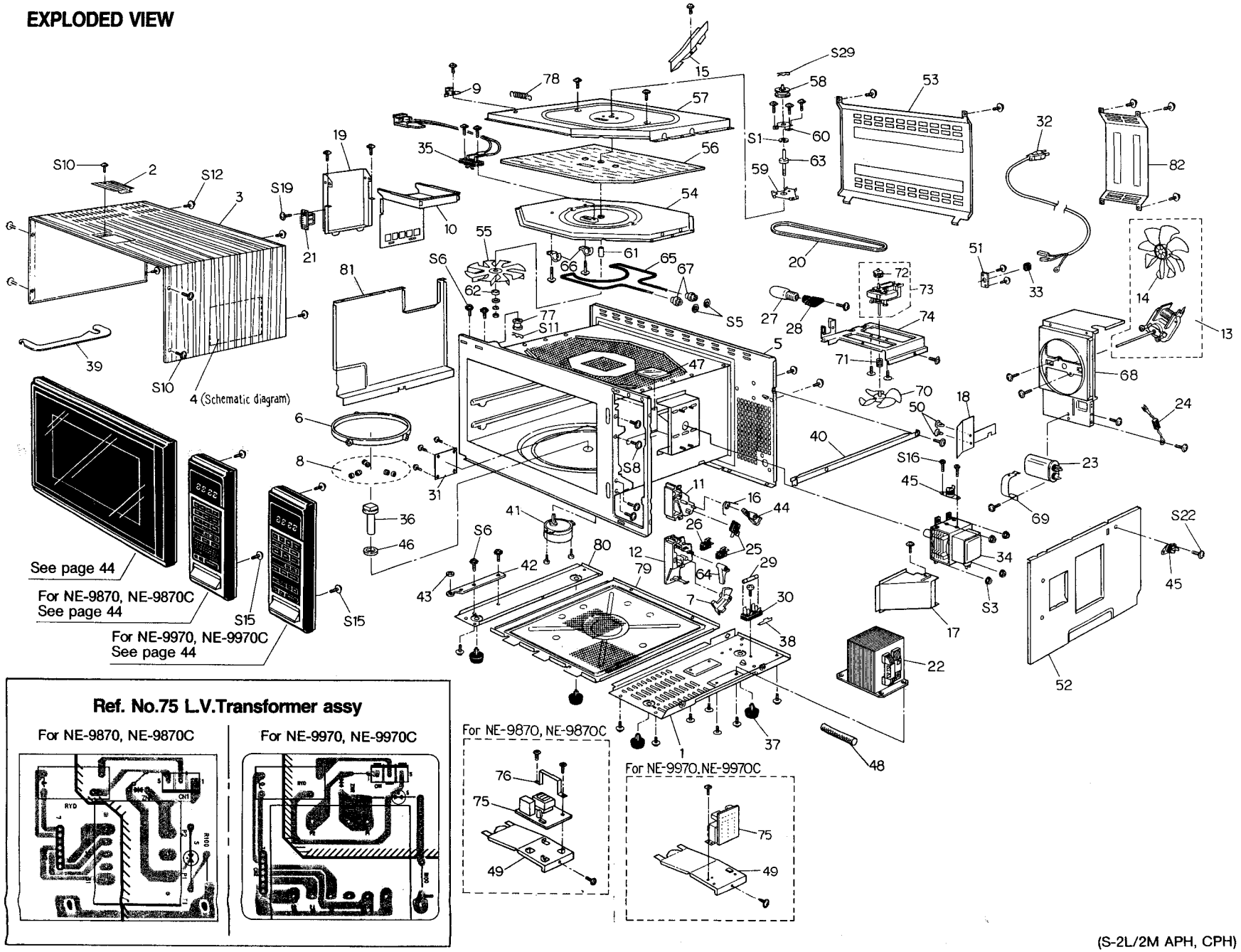
8. Combination Cooking (Time cooking)

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap combination pad twice.	• Category number "2" appears in the display window. • Combination cooking indicator light turns on.	
2	Set cooking time for 2 min.	• Category number "2" disappears and Combination Cooking time "H 2" appears in the display window.	
3	Tap Start pad	• Oven lamp turns on. • Combination cooking begins. • Combination cooking indicator light begins to blink. • Turntable begins to rotate. • Combination cooking time starts counting down. **NOTE:** **During combination cooking, in every 22 second time period, the cooking modes are switched with a 6 second microwave power period then 16 seconds of convection heater operation.** 	

9. Auto Weight Combination Cooking

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Control, Combination Pad 5 times.	• Clock time disappears • Auto Weight Combination Cooking indicator lights turn on. • Category number "C5" appears. • "lb" appears in the display window.	
2	Set the weight for 3 pounds by tapping 1.0 (lb) pad 3 times.	• Category number "C5" disappears and selected weight "3.0" appears in the display window.	
3	Tap Start Pad	• Selected weight "3.0" disappears and Combination Cooking time "1H 18" appears and starts counting down. • Auto Weight Combination Cooking indicator light begins blinking. • Auto Weight Combination Cooking begins.	
4	Tap Stop/Reset Pad twice.	• Oven shuts off. • The display window will show TOD again.	

EXPLODED VIEW



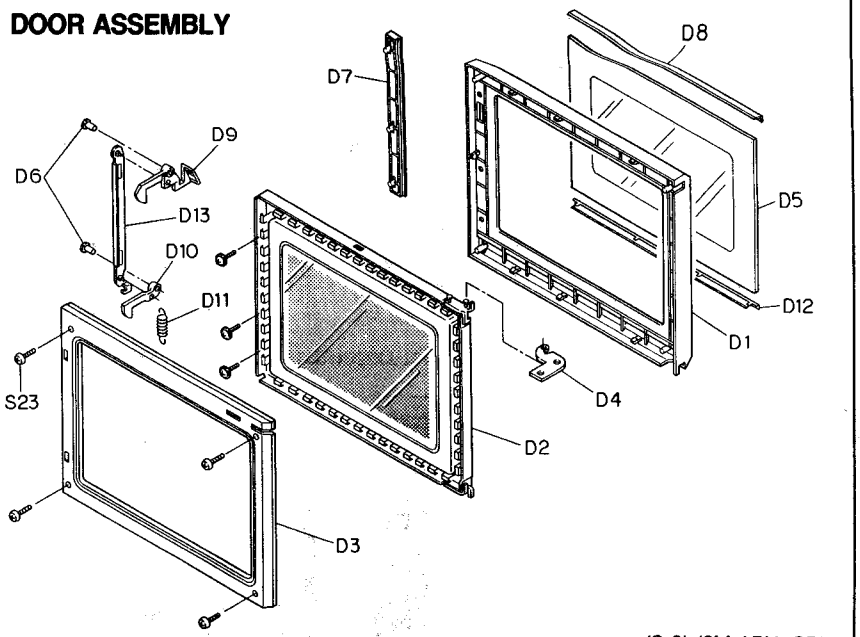
Ref. No.75 L.V.Transformer assy

For NE-9870, NE-9870C

For NE-9970, NE-9970C

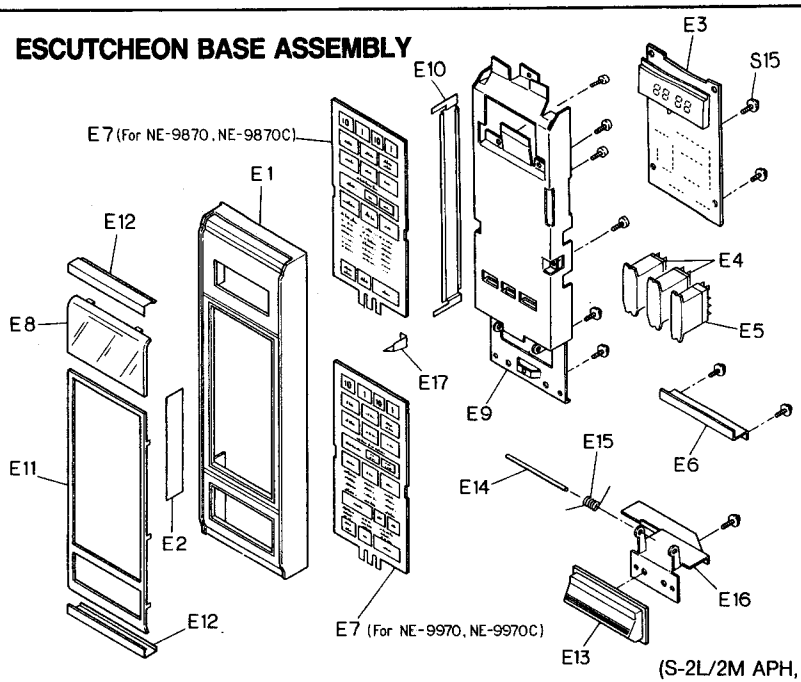
(S-2L/2M APH, CPH)

DOOR ASSEMBLY



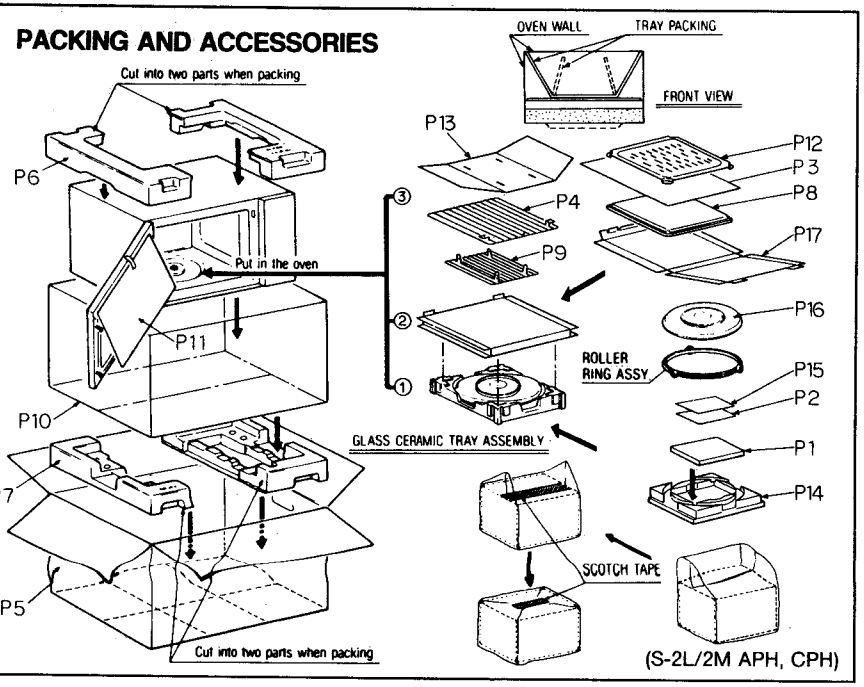
(S-2L/2M APH, CPH)

ESCUTCHEON BASE ASSEMBLY



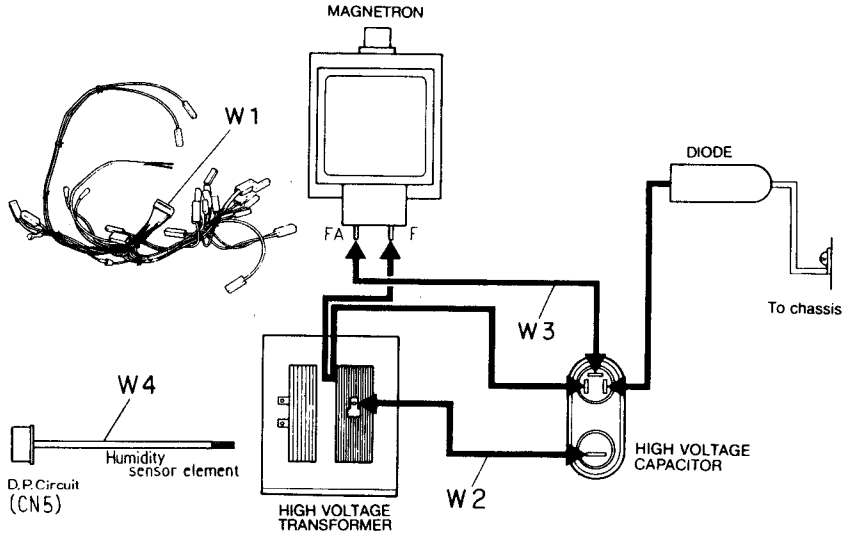
(S-2L/2M APH, CPH)

PACKING AND ACCESSORIES



(S-2L/2M APH, CPH)

WIRING MATERIAL



(S-2L/2M APH, CPH)

PARTS LIST (NE-9870, NE-9870C, NE-9970, NE-9970C)

NOTE 1: When ordering replacement part(s), please use part number(s) shown in this parts list. Do not use description of the part.
2: Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
1		ANE110EX00AQ	Base assy	1	
2		ANE10602L0AP	Lamp cover assy	1	
3		ANE10092L0AP	Outer panel	1	(NOTE 3)
4		ANE00012M0AQ	Schematic diagram	1	For NE-9870, NE-9970
		ANE00012M0CQ	Schematic diagram	1	For NE-9870C, NE-9970C
5	⚠	ANE200A2L0AP	Oven assy	1	
6		ANE290D2L0AP	Roller ring assy	1	
7		ANE31372A0AP	Hook spacer B	1	
8		ANE202K2L0AP	Roller B assy	1	(NOTE 4)
9		ANE31562L0AP	Holder A	1	
10		ANE40242L0AP	Exhaust guide A assy	1	
11	⚠	ANE30202L0AP	Door hook A	1	
12	⚠	ANE32672L0AP	Door hook B	1	
13		ANE400A2L0AP	Fan motor assy	1	(35W) With fan
14		ANE4008B00AP	Fan	1	Fan blade only
15		ANE40262L0AP	Air guide B assy	1	
16		ANE30972L0AP	Spring	1	
17		ANE40252L0AP	Air guide A	1	
18		ANE40472L0AP	Air guide E	1	
19		ANE400P2L0AP	Exhaust guide B assy	1	For NE-9870, NE-9870C
		ANE400P2M0AP	Exhaust guide B assy	1	For NE-9970, NE-9970C
20		ANE41552L0AP	Belt C	1	(Si)
21		ANE601L-F70	Sensor element	1	For NE-9970, NE-9970C
22	⚠	ANE600BX00AP	H.V.Transformer	1	(1.3KVA)
23	⚠	ANE6090X00AP	H.V.Capacitor	1	(0.95μF, AC2000V)
24	⚠	ANE6202X00AP	Diode	1	(Si)
25	⚠	ANE6142-F60	Switch	2	Latch switch A, B (V-15G-3C26)
26	⚠	ANE6178-F80	Switch	1	Short switch (V-15-2C25)
27		ANE6030540AP	Oven lamp	1	(125V, 20W)
28		ANE6152110AG	Oven lamp socket	1	
29	⚠	ANE6230B00AP	Fuse	1	(15A)
30		ANE6231-F50	Fuse holder	1	
31		ANE20552L0AP	Cover A	1	
32		ANE900CL10AG	Power supply cord	1	
33		ANE9027510RN	Cord bushing	1	
34	⚠	2M204-M1	Magnetron	1	
35		ANE605Y2L0AP	Oven temp sensor	1	With small P.C.B
36		ANE200YX00AP	Pulley shaft	1	
37		ANE1008B00SS	Rubber foot	4	
38		ANE6611X00AP	Spacer	1	
39		ANE30042L0AP	Door arm	1	
40		ANE20342L0AP	Reinforce bracket A	1	
41		ANE6326X00AP	Turntable motor	1	(4W)
42	⚠	ANE30072L0AP	Lower hinge	1	
43		ANE3081B60AP	Door hinge spacer	1	
44		ANE62412L0AP	Lever	1	
45		ANE6145X00AP	Thermal cutout	2	
46		ANE2177X00AP	Washer	1	
47		ANE64372L0AP	Glass plate	1	(For oven lamp)
48		ANE61392L0AP	Insulation tube	1	
49		ANE65642L0AP	Bracket	1	For NE-9870
		ANE605P2L0CP	Bracket	1	For NE-9870C
		ANE6564X40AP	Bracket	1	For NE-9970
		ANE65642M0CP	Bracket	1	For NE-9970C

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
50		ANE9080110AG	Clip	2	
51		ANE9035B00AP	Cord stopper	1	
52		ANE203N2L0AP	Right heater panel	1	
53		ANE10582L0AP	Back panel cover A	1	
54		ANE203L2L0AP	Upper panel B	1	
55		ANE2239-F40	Circulation fan	1	
56		ANE22422L0AP	Adiabatic material A	1	
57		ANE22782L0AP	Upper heater panel	1	
58		ANE41322L0AP	Pulley B	1	
59		ANE41572L0AP	Fan bracket A	1	
60		ANE41582L0AP	Fan bracket B	1	
61		ANE41612L0AP	Spacer A	1	
62		ANE41622L0AP	Spacer B	1	
63		ANE41642L0AP	Shaft assy	1	
64		ANE31362A0AP	Hook spacer A	1	
65		ANE630G2L0AP	Heater A	1	For NE-9870, NE-9970
		ANE630G2L0CP	Heater A	1	For NE-9870C, NE-9970C
66		ANE64172L0AP	Heater support	2	
67		ANE6501K90AP	Holder C	2	
68		ANE400R2L0AP	Fan motor bracket B	1	
69		ANE6037X00AP	Capacitor bracket	1	
70		ANE40082L0AP	Fan	1	
71		ANE4057-F50	Spring	1	
72		ANE41312L0AP	Pulley A	1	
73		ANE41792L0AP	Heater fan motor	1	(20W)
74		ANE41802L0AP	Bracket	1	
75		ANE692M2L0AP	L.V.Transformer assy	1	For NE-9870, NE-9870C
		ANE692M2M0AP	L.V.Transformer assy	1	For NE-9970, NE-9970C
76		ANE6551B00AP	Holder bracket	1	For NE-9870, NE-9870C
77		ANE30342L0AP	Door guide roller	1	
78		ANE30092L0AP	Door spring	1	
79		ANE101A2L0AP	Base C assy	1	
80		ANE1129X00AP	Base B	1	
81		ANE22372L0AP	Left heater panel	1	
82		ANE40302L0AP	Air guide D	1	

NOTE 3: Please order schematic diagram together.
NOTE 4: When ordering the roller B assy, each three rollers and washers will be shipped.
When replacing the roller B, each three rollers and washers should be replaced at the same time.
Otherwise the glass ceramic tray may not turn smoothly.

DOOR ASSEMBLY

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
D1	⚠	ANE30012L0AP	Door A assy	1	
D2	⚠	ANE301Q2L0AP	Door E assy	1	
D3	⚠	ANE30852L0AP	Door C	1	
D4	⚠	ANE30062L0AP	Upper hinge	1	
D5		ANE31462L0AP	Door screen B assy	1	For NE-9870, NE-9870C
		ANE31462M0AP	Door screen B assy	1	For NE-9970, NE-9970C
D6		ANE3056X00AP	Handle pin	2	
D7		ANE30122L0AP	Door handle	1	
D8		ANE30662L0AP	Upper sash	1	
D9		ANE3018X00AP	Door key A	1	
D10		ANE3019X00AP	Door key B	1	
D11		ANE30212L0AP	Door key spring	1	
D12		ANE30672L0AP	Lower sash	1	
D13		ANE301HX00AP	Door key lever B	1	

PACKING AND ACCESSORIES

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
P1		ANE000B2M0AP	Cook book	1	
P2		ANE00032M0AP	Instruction book	1	For NE-9870, NE-9970
		ANE00032M0CP	Instruction book	1	For NE-9870C, NE-9970C
P3		ANE02072L0AP	Styrol sheet	1	
P4		ANE06022L0AP	Rack	1	
P5		ANE01022L0AP	Outer case	1	For NE-9870
		ANE01022L0CP	Outer case	1	For NE-9870C
		ANE01022M0AP	Outer case	1	For NE-9970
		ANE01022M0CP	Outer case	1	For NE-9970C
P6		ANE01042L0AP	Upper filler	1	
P7		ANE01052L0AP	Lower filler	1	
P8		ANE06032L0AP	Cookie sheet	1	
P9		ANE06412L0AP	Rack B	1	
P10		ANE0106910AP	Vinyl cover	1	
P11		ANE0107580AP	Door sheet	1	
P12		ANE06482L0AP	Spatter shield	1	
P13		ANE01082L0AP	Tray packing	1	
P14		ANE01132L0AP	Tray styrol	1	
P15		ANE0169B60AP	Servicenter list	1	For NE-9870, NE-9970
		ANE0169B60CP	Servicenter list	1	For NE-9870C, NE-9970C
P16		ANE06012L0AP	Glass ceramic tray	1	
P17		ANE01172L0AP	Packing B	1	

ESCUTCHEON BASE ASSEMBLY

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
E1		ANE80342L0AP	Escutcheon base assy	1	(NOTE 5)
E2		ANE01572L0AP	Name plate	1	For NE-9870
		ANE01572L0CP	Name plate	1	For NE-9870C
		ANE01572M0AP	Name plate	1	For NE-9970
		ANE01572M0CP	Name plate	1	For NE-9970C
E3		ANE603L2L0AP	D.P.Circuit assy	1	For NE-9870, NE-9870C (W/Component)
		ANE603L2M0AP	D.P.Circuit assy	1	For NE-9970, NE-9970C (W/Component)
E4		ANE6126X00AP	Power relay	2	(G4W-11123T-US)
E5		ANE61262L0AP	Power relay	1	(G2R-1123T-V-US)
E6		ANE62462L0AP	Power relay bracket	1	
E7		ANE64792L0AP	Membrane switch	1	For NE-9870, NE-9870C
		ANE64792M0AP	Membrane switch	1	For NE-9970, NE-9970C
E8		ANE81262L0AP	Smoke panel	1	
E9		ANE81272L0AP	Bracket	1	
E10		ANE81892L0AP	Escutcheon panel	1	
E11		ANE80012L0AP	Escutcheon A	1	
E12		ANE80362L0AP	Escutcheon sash	2	
E13		ANE80722L0AP	Door opening button	1	
E14		ANE8191C30AQ	Cook lever shaft	1	
E15		ANE8194Q40AQ	Cook lever spring	1	
E16		ANE82562L0AP	Door opening lever	1	
E17		ANE80662L0AP	Plate spring	1	

WIRING MATERIAL

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
W1		ANE030A2L0AP	Lead wire harness	1	For NE-9870
		ANE030A2L0CP	Lead wire harness	1	For NE-9870C
		ANE030A2M0AP	Lead wire harness	1	For NE-9970
		ANE030A2M0CP	Lead wire harness	1	For NE-9970C
W2		ANE0350X00AP	Lead wire	1	
W3		ANE0351X00AP	Lead wire	1	(NOTE 6)
W4		ANE03532M0AP	Shield cable	1	For NE-9970, NE-9970C

NOTE 5: Please order name plate together.

NOTE 6: When this lead wire is open, replace together with magnetron.

STANDARD PARTS

Ref. No.		Part No.	Description	Size (mm)	Q'ty	Usage
S1		XUEANE32KP	U ring		1	Shaft
S2		XTW4+12Q	Screw	4X12	3	Bracket
					2	Power relay bracket
					1	Door opening lever
S3		XNWANE5ES	Nut	M5	4	Magnetron
S4		XNG4EVS	Nut	M4	1	Circulation fan
S5		XUBANE66FZ	CS ring		2	Heater A
S6		XYEANE5+E12S	Screw	5X12	2	Upper hinge
					2	Lower hinge
S7		XST4+5VS	Screw	4X5	4	Cover A
S8		XTW4+12T	Screw	4X12	2	Door hook A
					2	Door hook B
S9		XTNANE4+10B	Screw	4X10	2	Turntable motor
					1	Fuse holder
					2	Bracket
					1	Door handle
S10		XTC4+12BC	Screw	4X12	4	Outer panel
					1	Lamp cover
S11		XPDANE3A16KP	Wire pin	3X16	1	Door guide roller
S12		XTWANE4+12E	Screw	4X12	1	Power supply cord ground
					4	Outer panel
					1	Diode ground
S13		XTWANE4+8S	Screw	4X8	2	Fan motor
					2	Heater fan motor
S14		XTWANE4+8BN	Screw	4X8	2	Air guide B
S15		XTWANE4+12B	Screw	4X12	2	Air guide D
					4	Base
					2	D.P.Circuit
					1	Capacitor bracket
					2	Back panel cover
					1	Right heater panel
					1	Bracket
					2	Escutcheon base
					2	Base C
					1	Left heater panel
					2	Base B
					1	Bracket
					4	H.V.Transformer
					2	Cord stopper
					1	L.V.Transformer (For NE-9970, NE-9970C)
					4	Fan motor bracket B
					1	Reinforce bracket
S16		XTEANE3+6B	Screw	3X6	2	Thermal cutout (For magnetron)
S17		XWA4BV	Washer	M4	1	Shaft
S18		XWG4BV	Washer	M4	1	Shaft
S19		XTNANE4+10BN	Screw	4X10	1	Sensor element (For NE-9970, NE-9970C)
S20		XSN4+35SN	Screw	4X35	2	Fan bracket A
S21		XYF4+AF6	Screw	4X6	1	Air guide A
S22		XTWANE4+12BN	Screw	4X12	4	Upper heater panel
					2	Upper panel
					2	Heater fan motor
					1	Left heater panel
					1	Holder A
					2	Exhaust guide A
					1	Thermal cutout (For oven)
S23		XTBANE4+12FK	Screw	4X12	4	Door C
S24		XTW4+8T	Screw	4X8	2	Door handle
S25		XTWANE35+14B	Screw	3.5X14	2	Oven temp sensor
S26		XTWANE35+14N	Screw	3.5X14	2	Heater support
					1	Oven lamp socket
S27		XTWANE4+12B3	Screw	4X12	1	Base B
S28		XTWANE4+8B	Screw	4X8	2	Holder bracket (For NE-9870, NE-9870C)
S29		XPDANE8A28KP	Wire pin	8X28	1	Pulley B

Ref.No.75 L.V.Transformer assy

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
RY1		AEAWG5R1T18	Power relay	1	(G5R-1112P)
CN1		AEEMA1726815	Connector	1	
CN2		ANE03522M0AP	Lead wire	1	
ZNR		ANE604QB00AP	Varistor	1	
T1		ANE62492L0AP	L.V.Transformer	1	For NE-9870, NE-9870C (ETP41K86B)
		ANE6249X40AP	L.V.Transformer	1	For NE-9970, NE-9970C (ETP54J9A)